

The International Journal of Orthodontia

Editor: Martin Dewey, D.D.S., M.D.

VOL. IV

ST. LOUIS, DECEMBER, 1918

No. 12

ORIGINAL ARTICLES

A CONSIDERATION OF SOME PRINCIPLES OF REGULATING APPLIANCES*

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REGULATING appliances may be defined as mechanical devices for exerting pressure upon malposed teeth for the purpose of creating cell activity and thereby causing the teeth to assume proper positions in the line of occlusion. According to this definition, regulating appliances must be considered as mechanical devices that produce pressure on the malposed tooth, and this pressure produces cell activity first and then in conjunction with the cell activity it moves the tooth into its proper position. A careful analysis of this definition will result in an understanding of regulating appliances which has not been observed in the past by many manufacturers and men advocating the use of different styles of appliances. In times past regulating appliances have been used and advocated which considered only one part of this definition; namely, the exerting of pressure upon malposed teeth for the purpose of moving them to a certain position. Any regulating appliance that has for its object the mechanical movement of a tooth without a consideration of cell activity will produce a pathologic movement and result in all sorts of undesirable conditions.

Any regulating appliance for the correction of malocclusion is only an aid toward Nature's process of development and should aim to produce pressure on the tooth and create cell activity, and from that time on the movement of the tooth should be as near in keeping with the development which occurs during natural development and tooth eruption as can possibly be obtained. In times

*Read before the eighteenth meeting of the American Society of Orthodontists, Chicago, Ill., August 1-3, 1918.

past the various requirements of regulating appliances have been enumerated, and in the sixth edition of Angle's book we find the following: "Efficiency, simplicity, delicacy, inconspicuousness and stability of attachment." Admitting that these five requirements are essential, there is no question but that efficiency takes foremost rank among the requirements of regulating appliances. Regardless of how nicely an appliance may be constructed, or how beautifully it may work on paper, or how successful you may be in obtaining a patent from the patent office to cover this appliance, if it is not efficient it necessarily will be a decided failure. We recognize the fact that almost any style of appliance which exerts pressure on a malposed tooth will produce some sort of a result. Consequently, men in using appliances which fall far short of the best orthodontic principles have been able to accomplish results, but the appliance has been very lacking in efficiency from a physiologic and mechanical standpoint. In comparing efficiency of regulating appliances, we may say that you are able to travel over the country in a large automobile freight truck and you would eventually complete your journey, but you would be able to travel much more rapidly and with much more comfort in a touring car, and for that purpose the touring car would be considered more efficient for traveling. The automobile truck might have an efficiency for another purpose but not as a pleasure car.

Related to efficiency, which is foremost among the requirements of regulating appliances, I can not help but believe that the stability of attachment or anchorage plays a great part and is a certain factor in efficiency. An appliance may be very nicely constructed and possess wonderful mechanical principles, but if we do not have stability of attachment either to the anchor tooth or the malposed tooth, we necessarily are going to get an unsatisfactory result.

In considering the question of the principles of appliances, anchorage may be defined as a resistance to overcome an applied force. We must also remember that action and reaction are equal, and consequently our anchorage must be sufficient to absorb the force that is going to be applied to the malposed tooth, unless we use reciprocal anchorage, in which case the action and reaction are both equalized by selecting a malposed tooth as the point of resistance. I believe that anchorage is one of the more important things in the efficiency of regulating appliances, and is something which should be considered separately from the regulating appliance during the planning of the treatment. One of the first things to be considered is the point of resistance, and an ideal appliance is one that is so constructed that special attention is given to resistance, which is increased by mechanical principles and plans.

In a great many instances it will be desired to construct an appliance so as to stabilize anchorage and in reality have a portion of the appliance concerned in anchorage separate and distinct from the moving part. Several years ago Barnes of Cleveland called attention to the fact that in using the labial alignment wire, commonly known as the expansion arch, there was a great tendency to displace the molars distally and buccally. It seems to me that the majority of orthodontists practicing at that time did not pay enough attention to Barnes' contention, for a number of results show that men were moving molars distally and buccally by displacing their anchorage. The reason for this is that the nat-

ural tendency of the labial alignment wire when used to expand the arch and at the same time move the incisors forward is to exert a distal and buccal force on the anchor tooth. By using the ordinary molar clamp band or single attachment upon the molars, there is no provision made to prevent this distal and buccal movement except the supporting tissue.

Now, as an example, the efficiency of such an appliance can be greatly increased and the anchorage stabilized if the molar on the right and left sides was attached to a lingual wire, which lingual wire would not be used to move the molar, but simply be used for stabilizing the molar anchorage. This lingual wire could also be so constructed and used as to produce the molar expansion, and the expansion of the molar could be under the influence of the lingual wire and in no way be affected by the labial alignment wire, which is producing the movement of the rest of the malposed teeth. As a result of this, I believe that one good principle of regulating appliances is to have a separate attachment upon the anchor teeth, whereby one can control them independently of the rest of the malposed teeth.

It may further be said that any regulating appliance will be increased in efficiency as it is constructed so as to allow individual tooth movement or individual adjustment. In the last few years attempts have been made by certain men to introduce appliances which could be adjusted at one time and which would move the teeth to the proper position without further adjustment. Appliances have also been introduced which have been made out of small gauge wires for the purpose of exerting pressure upon all the teeth at the same time and moving all of them into the line of occlusion. We recognize the desirability of moving all of the teeth at once, but we also are forced to recognize the mechanical principle that with a bent, curved or looped wire, fitting into brackets or attached in tubes, it becomes practically impossible to exert force on one malposed tooth without changing the relation to the approximating tooth.

As a principle in the construction of regulating appliances I would, therefore, say that an appliance should be so constructed that each individual tooth could be adjusted without destroying or changing the force on the approximating tooth. This factor is one thing which has made the use of the alignment wire with ligatures such a universal appliance. If we had a 16-gauge wire with a properly constructed anchorage and ligatures, by tightening one ligature on the alignment wire we would disturb the approximating teeth very little, provided the alignment wire is heavy enough to absorb the force from the tightened ligature.

In other words, an appliance should be so constructed as to have firm anchorage. Then there should be a base wire or part to that appliance from which the force for the individual teeth is obtained. As an example of this, one of the beautiful mechanical principles of the Jackson removable appliance is the construction of the appliance in such a manner that groups of teeth serve as anchor teeth, thereby greatly increasing the resistance over single teeth. Secondly, the appliance consists of a base wire from which the various forces are originated. These various forces are produced by means of individual finger springs which work on individual teeth and on such teeth as need to move in a

certain particular direction. In adjusting these appliances to exert increased force, the finger springs can be adjusted to exert pressure on a single tooth or group of teeth, and without disturbing the base wire. Therefore, no undue stress has been brought to bear on the anchor teeth as the result of changing the entire appliance; neither has one group of teeth been disturbed by adjusting or increasing the pressure on another single tooth.

I would, therefore, say that as a general rule regulating appliances should possess three distinct mechanical parts or plans: First, some means of procuring the anchorage, then having that anchorage under absolute control. Second, the construction of a base wire from which the force is exerted and, third, some sort of attachment to that base wire to exert the pressure on the malposed teeth. These are three things which must be considered, and if it is possible to obtain these three things in a simply constructed appliance, so much the better; but if the malocclusion is very extreme it will be necessary to greatly change the appliances from what has been used in times past in order to follow out these principles.

It is possible to follow out these principles with a removable regulating appliance, and the same thing can be obtained with fixed appliances. An example of fixed appliances which control the anchorage and which furnish a base from which the force is applied to the malposed teeth, and which furnish individual tooth attachment is such an appliance as was advocated by Lourie at our last meeting; namely, by using plain bands upon the molars, a lingual alignment wire soldered to those molars we are able to utilize that lingual wire for the purpose of controlling the molar anchorage, and also by proper manipulation can move those molars in various directions. Now this lingual wire will control the molars absolutely and should be utilized in a number of cases for no other purpose. However, with the proper construction of the lingual alignment wire it will not only be possible to use wire to control the molars, but it will also be possible to make various tooth movements in the other parts of the mouth.

As a means of exerting pressure from the lingual alignment wire upon individual groups of teeth, the finger spring as used by Dr. Mershon, is good. The use of the finger springs upon lingual alignment wires affords a means of exerting force upon malposed teeth by using the lingual wire as the base wire, which can also be used as a means of stabilizing the molars. In using the finger springs upon lingual wires, following out our mechanical principle, the finger springs should necessarily be of a smaller gauge than the alignment wire, so the lingual alignment wire will be capable of absorbing all the force from the finger springs and not be distorted and therefore exert pressure on teeth when that pressure is not desired.

I have called attention to the fact that as a principle of regulating appliances is the stabilizing of the anchorage, that the lingual alignment wire can be used to stabilize the molars and used for that purpose only. Then as a means of exerting pressure upon the malposed teeth, I would recommend the use of the labial alignment wire, and for reasons of inconspicuousness would say that the labial alignment wire should be placed high, or gingivally, out of sight, as shown by Doctor Lourie in his paper at Excelsior Springs. Now this labial alignment

wire becomes the base wire on which force is exerted, and the force to the individual malposed teeth is again exerted by means of finger springs in whichever direction it is desired. Now in order that individual force can be exerted by means of finger springs upon individual teeth, the finger springs are made of material, say 24 or 26 gauge, while the labial alignment wire is made of material 17 or 18 gauge. This difference in gauge between the size of the labial alignment wire and the finger spring makes such an appliance that pressure can be brought to bear upon individual teeth, and this pressure will be absorbed by the larger labial wire. The resistance of the labial wire will be obtained from the anchor teeth, which have been stabilized by means of a lingual alignment wire.

In times past I believe appliances have been constructed in which too little attention has been paid to the anchorage. An appliance should be so constructed that pressure can be exerted on malposed teeth without disturbing or changing the anchor teeth. This can only be done when one has the anchor teeth stabilized, or has some means of absolutely controlling the teeth to which the attachment is made.

Another principle which I wish to mention is that no regulating appliance should be so constructed as to be universal for various cases. Advertisements have appeared and articles have appeared as scientific papers, in which men advocated the use of one style of appliance for every type of malocclusion. Advertisements have also stated that if this appliance is placed on the teeth it will do the work. Such things are very misleading, and any appliance which carries out the idea or information that malocclusion can be corrected by a single adjustment is a very good appliance to let alone. We must remember that a regulating appliance exerts pressure on malposed teeth for the purpose of creating cell activity, which therefore means that we are dealing with physiologic tissue, and this tissue will not respond the same in different individuals, even though the malocclusions are of a similar type. Also, any regulating appliance which exerts enough pressure on a malposed tooth in the beginning of the case to carry this case to completion is a dangerous thing to use.

Another feature or principle of appliances is that the appliance should exert force on the tooth so as to move the tooth physiologically. Any tooth which is being moved physiologically will be moved painlessly. As a result of this it becomes necessary that any appliance that exerts pressure on a tooth must do so without producing pain. Pain is absolutely unessential and unnecessary. It is to be avoided and can be avoided by the proper construction and use of the appliance so as to exert the proper amount of force. Pain is always an indication of faulty technic, which may be caused by improperly constructed bands, or the improper application of force, and any appliance which does not move teeth without pain is not moving them physiologically.

In closing, I will say that if we consider appliances from the standpoint of the definition and what they are to do, and remember that we have certain mechanical laws which must be observed, a large number of appliances will constantly be cast into the discard because they fail to come up to these mechanical principles.

DISCUSSION

Dr. William G. Law, New York City.—I have not very much to say after the discussion yesterday and the principles of appliances having been so clearly stated in Doctor Dewey's paper.

There are a few small points which to me are exceedingly important which accompany the ideas presented concerning the underlying principles of regulating appliances, and while efficiency of course is the main thing to be considered in all work we undertake for our patients, efficiency is a very big word. Beauty lies in the eyes of the beholder, and it has always seemed to me that the appliances which we should use should first be made as beautiful as possible and as inconspicuous as possible. It has been my experience that patients do not like the looks of any kind of appliance, and the first thing we should decide in selecting either a metal or alloy appliance is, which is the least conspicuous. The formation of the bands which are used on the anterior teeth should be of a form that lends beauty, and the appliance which covers the labial surfaces of the teeth, if one is used, should be made so close to the teeth and so small that it does not interfere with the movements of the cheeks and lips. Dr. Rogers has brought this out in his paper showing the necessity of allowing the teeth and lips to have free movement. On the inside of the mouth this is quite true of the tongue, and the smaller the appliance, in my experience, and the closer it lies to the gingival margins, the more the tongue can have free movement and free function. The smaller the appliance used in every case consistent with the strength of the wire, the nicer the result. Naturally we must think of a wire that has a character, that will not lose its force in the action we undertake. We fortunately have today wires which we can use in the small gauge and band material which can be used in a thin gauge that answers every purpose much better than thick bands or large wires.

As to the question of cleanliness in the mouth, where an appliance is left in the mouth for a considerable length of time and one can not see the patient often, the appliance should be constructed in a way that the patient can keep the teeth comparatively clean. Unless this is done, we have the chance of having disagreeable results, and what is the use of regulating teeth and putting the mouth and face in harmony if the teeth go to pieces under our appliance? So not only should the appliance be constructed from the standpoint of efficient work, but it should be beautiful and it should be cleanly. I believe all of these points can be brought into every appliance for every case that we treat, whether the patient is three or sixty years old! Older patients' teeth move apparently as easily as younger patients' teeth. It takes a longer time to accomplish a great many of our movements. The teeth move. The muscles themselves move, if not counterbalanced by other muscles. We move the teeth in any direction, the muscles pull or press upon the teeth. That is shown in a great many cases where there has been loss of the tongue or loss of bony tissue of the part or where abscesses have occurred or injuries have occurred on the face in the neighborhood of the jaw, where the muscles have contracted and drawn the bony structures and teeth with them all out of position.

Dr. Rogers showed how the muscles through proper and normal occlusion develop the jaws and develop the face without the aid of any appliance; and others with the aid of small, gentle, coaxing appliance, with the aid of the muscles, have shown that results are in proportion to what we knew some years ago, very gratifying!

The door is opening, it seems to me, in orthodontia, so that we can see clearly into the future; that we have a field and the opportunity in the future to do work with the smallest amount of discomfort to our little patients. We can work on younger patients than we thought before. We can do these things with smaller appliances, seeing the patients less often, and with less discomfort and a much more comfortable sensation in the mouth for these little patients than we ever thought before, and the principle underlying all appliances, underlying all efficiency, should be the absolute control of every tooth that the appliance touches, whether it is a molar, or whether it is a tooth to be moved, aside from the molar.

I believe that the large bands which have been used to attach a labial appliance to the molars by screws and tubes are disappearing, and that is to me a great advantage in cheek freedom. Even if we are compelled at times, as we are and always will be, to use a labial arch of small gauge, we can use a small tube, one that lies close to the molar band and will not interfere with cheek movement, and will produce absolutely no discomfort to the patient. It will be nearly the same as though no labial appliance was present. The larger the labial appliance, the more discomfort the patient experiences, and the less

labial appliances we are compelled to use, the more comfort the patient will have. I believe we will succeed in the future in controlling and correcting all of our malocclusions with lingual appliances, and then the ideal will nearly have been reached, and the amount of control in the corrective work that is necessary from labial appliances will be so small and so inconspicuous that there will be no disadvantage in having to use them, and they can be used in a sort of removable appliance which will not have to be worn all the time and can be removed as we direct for cleanliness and also for the esthetic appearance.

Dr. Ray D. Robinson, Los Angeles, California.—I have a case to show at this meeting, and I believe it would be quite apropos to put the slides on at this time in answer to Dr. Dewey's criticisms which were leveled at the appliance with which the case was corrected and which I showed the society some years ago, and if I may have your permission, Mr. President, I will show the case at this time.

Dr. Dewey made some statements to which I must take exception. He said that "if the force is sufficient to move a tooth the full distance which it must travel, it is too severe in the beginning." I grant Dr. Dewey it may be so with the appliance or appliances he uses, but it is not so with the small appliances. It is possible to use an appliance made of .020 wire which will move a tooth over a great distance without at any time exerting more than a fraction of an ounce of pressure. That is the basic principle of the little wire. It can be so adjusted that it will continue its slight pressure for a long time and over a longer distance in space. I hope that point will be taken home. I hope you will understand exactly what I mean when I say that.

Another statement to which I wish to take exception, which was made by Dr. Dewey. His statement was: "that all types of cases can not be handled with the same type of appliance." Maybe he can not do it, but I attempt it at least. I have used nothing but the .020 wire for a number of years. Another thing I wish to say to you is this, that Dr. Dewey is quite unfair when he refers to the multiplicity of loops and twisting of the wire. Dr. Dewey is very well informed that such has not been the use of my appliance for more than two years; Dr. Dewey has been informed on that point for nearly that length of time. I will remind him that Dr. Sweet showed him some models with this appliance on, in Dr. Beaser's office, and he talked with Dr. Sweet for more than an hour and Dr. Sweet told him I had given up the loop and the appliance was put entirely inside. I also brought that out in the paper I read last year, yet Dr. Dewey in his book, which was published long after his talk with Dr. Sweet, speaks of the labial appliance with a multiplicity of loops. In fact the part of his book having to do with my appliance is almost an exact reprint of a paper read and published in 1915.

In view of the fact that I have admitted before this body and other societies, that the appliance as shown at the Toronto meeting was faulty and that the anchorages were not as stable as could be desired and in view of the fact that Dr. Dewey had full knowledge of these things it is unfair of him to come here and criticize that appliance as advocated four years ago, and to publish in his textbook, as my appliance, a form of appliance which he knows is obsolete and has been abandoned.

The case I wish to present in answer to Dr. Dewey is shown in Fig. 1.

I believe that we all have cases come to our attention in which the amount of tooth movement necessary to establish normal occlusion is so great that we are in doubt as to the advisability of undertaking the correction, I must plead guilty to hesitancy in many cases, and this was one that caused me to hesitate. The amount of work necessary and the age of the patient, and the chance of a successful issue were all unfavorable and I at first refused the case. The parents however were insistent and, as I was anxious to try the small wire on a case requiring radical tooth movement, I undertook the work. This was done, however, with full understanding on the part of the patient and her parents that it was to be an experiment with a new type of appliance.

I think you will agree with me that in such a case as this there can be hope of but little posterior movement of the mandible, and that practically all of the movement must be a movement anteriorly of the maxillary teeth. If you will observe you will see that to accomplish such a movement it would be necessary to move the maxillary incisors and cuspids into a position where they would be entirely outside the alveolar process by as much as half an inch. Yet that is exactly what was undertaken.

The lingual arch was adjusted in the upper and a full year was used to accomplish the required expansion. After this bands were adjusted on the upper right cuspid and central and a short wire with a loop was placed between them to secure their separation for

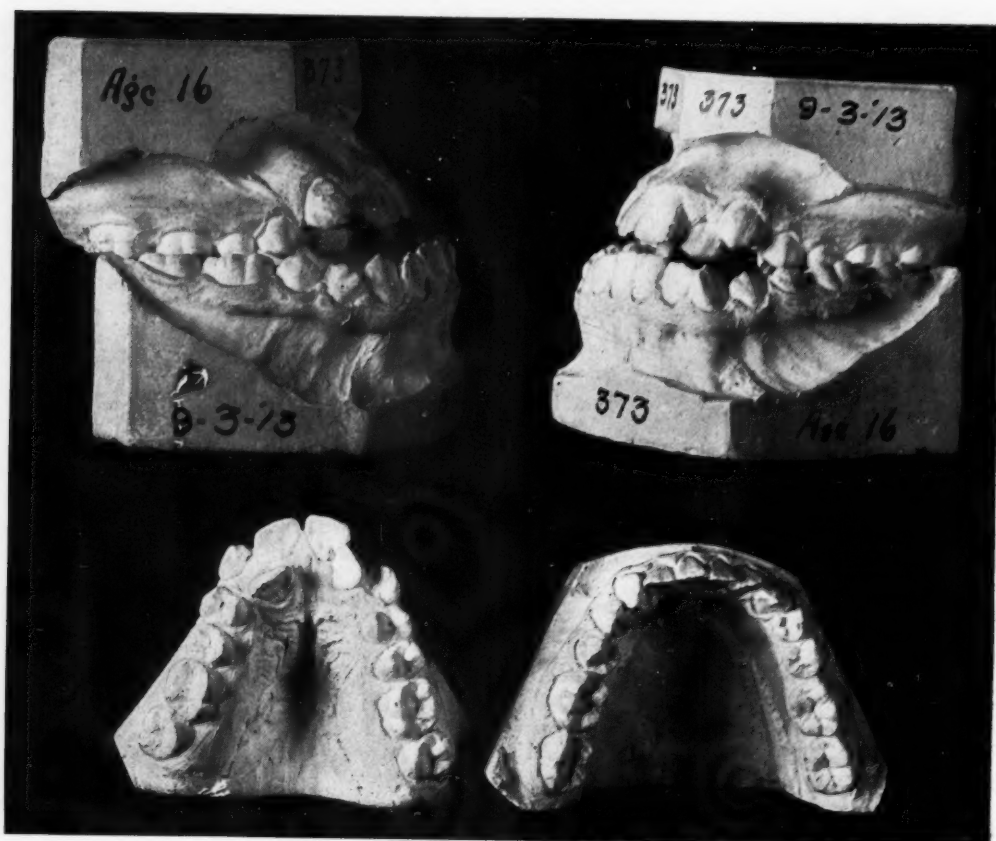


Fig. 1.

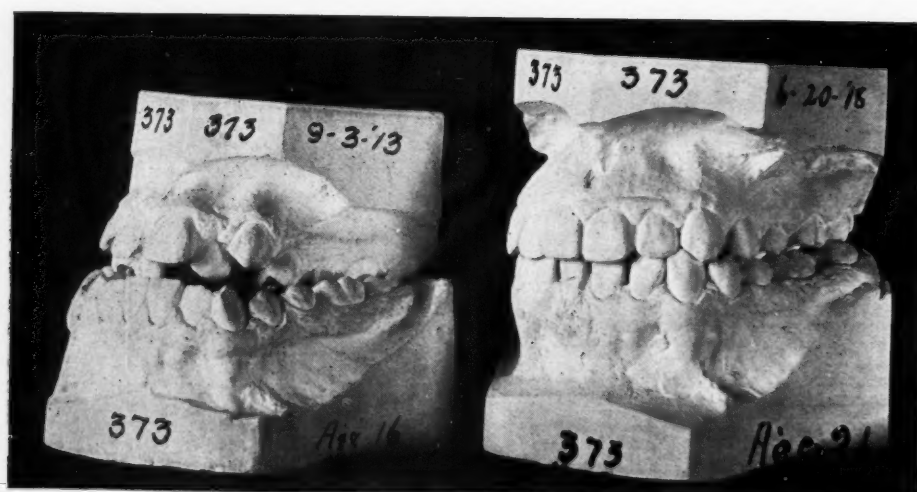


Fig. 2.



Fig. 3.

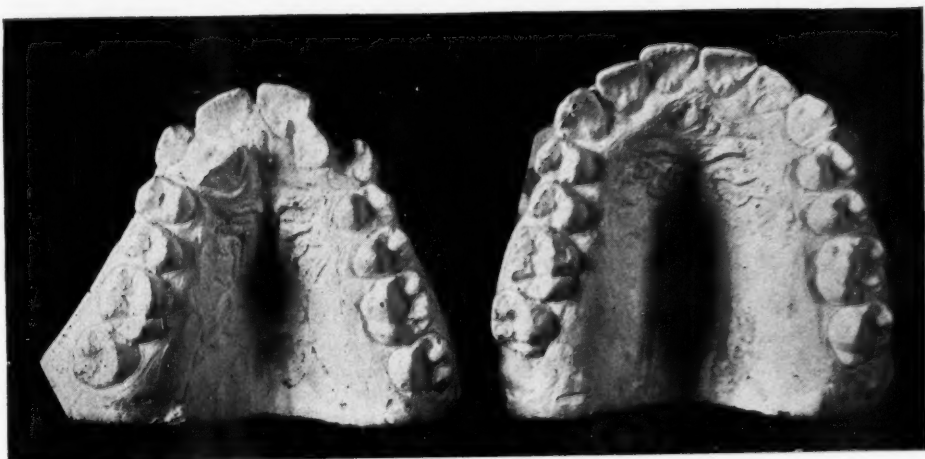


Fig. 4.



Fig. 5.

the accommodation of the lateral. After this space was wide enough an arch was placed on the labial side of the cuspids and incisors in such a way that it would exert pressure labially on the apices of their roots and at the same time a loop was dropped lingually to engage the right lateral and exert pressure to bring it into its proper position. After it was nearly into such relative position the intermaxillary rubbers were applied, as in all cases of mesial occlusion, and the correction was finally completed in a little more than four years after it was first undertaken. Figs. 2, 3 and 4 will show what was accomplished. The right maxillary lateral was moved more than three-fourths of an inch. All of the incisors and cuspids were moved into a position which at first was outside the line of the alveolar process, and an occlusion was established. Whether the occlusion is normal or not is for you to judge.

I feel that you are asking what the condition of the teeth is at present, whether they have any bony support, whether they are vital, and other similar questions, and you have the right to ask such questions. A look at Fig. 5, which was taken just before I left Los Angeles, will, I think, answer your questions. If not I will say that the teeth are as solid as when I first saw the patient.

Now, gentlemen, if the .020 wire will do that, why use larger wire? It has done it, and there are men here who have been in my office and have seen the appliance working in the mouth. Your president is one of them. When the .020 wire does these things, I say why use the larger ones? I just want to leave that question with you.

Dr. Ralph Waldron.—I would like to ask Dr. Robinson if any magazine has ever published an article with illustrations on this appliance he speaks of which is applied on the lingual and not on the facial surfaces of the teeth. I follow the dental literature very closely and do not recall seeing such an article other than the paper he read before this Society at Excelsior Springs, Missouri, last year, and that paper was not illustrated, nor the technic described. It was a paper entitled, "Further Experience with the .020 Arch Wire." His paper was a plea for the use of lighter arches and was very timely, but it does not refer to a lingual arch, nor does the discussion of this paper have any such reference.

I assure you I supposed Dr. Robinson's work was all done with the arch he showed us at Toronto, except with modified seats and blocks, and less exaggerated loops, and I can imagine Dr. Dewey was of the same opinion as myself. Therefore I think (putting it mildly), Dr. Robinson has been a little severe in his discussion of this paper, as far as his assertion of Dr. Dewey being unfair.

Dr. Robinson has shown us a most remarkable case, and deserves a great deal of credit, for he has obtained a most satisfactory result, but I would like to see the appliance and learn his technic, and I hope he will give us a paper in the near future showing his *modus operandi* more in detail than he has in this discussion.

Dr. Allen H. Suggett, San Francisco, California.—After seeing Dr. Robinson's appliance and his method of using it, I began two or three years ago to use the small wire, and I experimented cautiously with it for some time, and at first I was as gingerly about using it as we were a few years ago in coming down to the .030 wire that Dr. Angle recommended with his tubes and pin. I thought it was so small that it would not expand the arch, and Dr. Young gave a clinic and explained this wonderful little wire that would move a tooth. As we were all from Missouri, we had to be shown. Every one doubted that a tooth could be moved or an arch expanded with so small a wire after we had been using 16 gauge. When Dr. Robinson came to my office and gave a clinic on using .022 wire it seemed so slight that it seemed trivial; it seemed almost nonsensical that one could move a tooth with it. In using it as we used the old Angle wire, where we had a multiplicity of bands on centrals, laterals and cuspids, we had much more force than in the .030 wire, because with the small loops we could have a larger movement of the wire. It could be bent in to the tubes so that by the time expansion was had one would have movement twice or three times the width that could be made with the shorter wire. Dr. Young, at the time he gave his clinic, said one could expand that the thickness of the material in the tube, which is so small that, it seems to me, it would take a thousand movements to move a tooth in a case like that shown. With the smaller wire one can move it without any particular measurement, and as it is sprung into place there will be some bow in the wire and the wire will come down to the smaller circle, but the expansion will carry on the case for a long time. In the movement of the contiguous teeth we had a much larger amount of spring going on than we could get in the .030 wire. Dr. Robinson went us one better than that. He began to use .020 wire instead of

.022 wire. I have been using that on practically all cases since, and we finally came down to the multiplicity of bands on the molars and cuspids with the lingual wire connecting to take care of the bicuspid, but gradually we have been drifting down to the use of fewer bands.

In the last year or so, I think there has been a general drift towards the lingual wire, and we find there we have a great deal more strength in the small wire because of the shorter distance inside the arch than outside. We find that small wire will do the work and do it so comfortably and so easily that we are getting away from the use of ligatures because it is much easier to take care of the teeth, and I find that as we learn how to use the wire and follow the directions Dr. Robinson gave us, to let it alone and stop tinkering with it, we get much better results. His instruction was given to let it alone for a month or two, and then we would get along much better, and we will get the expansion and get it comfortably.

When I first began a case with 16 gauge wire I lost control of the anchorage in the first years of practice. We soon found out how much we could abuse our anchorage. Very few have trouble with anchorage now.

So far as using the small wire is concerned, when it is bent in it will be crowding the opposite direction in the molars from the direction desired. If we brought pressure on the bicuspid, we would tuck in the molars, that is due to excessive pressure. We get it in the same way with the larger arch. When heavy pressure is put on the bicuspid with ligature, the molars are pulled in just the same. It is a matter of degree, and we soon learn to handle that. As we perfect this in the lingual wire, as Dr. Law just said, we will get away with all the unclean conditions we have with the older appliances and get rid of the buccal tubes and large wire which is so hard to handle, and also ligatures which are so unclean.

Dr. F. C. Rodgers, St. Louis, Missouri.—The question has often occurred to my mind as to how far it is possible to move a tooth bodily. What is the maximum distance a tooth may be moved bodily with safety?

About two years ago I received a patient in my office in whom there was a malposition of a canine tooth. It had malerupted opposite the buccal surface of an upper molar. The tip of the canine protruded beyond the gum tissue just opposite the mesio-buccal cusp. The root or body of the canine extended distally, so that the apex of the root was opposite the distal right molar. The problem which presented itself to my mind was this: In order to move that canine into its proper position, it had to be moved bodily across the mesio-buccal root and over the surface of the two premolars. I was unable to decide whether such a movement was possible to accomplish. I inquired of several men who had been in practice a good many years, and the replies I received were not very encouraging. However, I attempted the case and up to the present time it is not yet completed, but I have succeeded in bringing the canine into its proper alignment, into proper occlusion, past the premolars. I have a series of models showing the case from its beginning up to the present time. I am retaining it now in its proper position. There is no further stress of movement at the present time and I am holding it and allowing nature to reestablish normal conditions around the roots of the tooth. With the society's permission, I would like to show these models at the clinic tomorrow, although I am not down on the program for a clinic.

Doctor Robinson.—I would like to have Dr. Rodgers describe the appliance he used to do this, inasmuch as this is a discussion on appliances.

Dr. Rodgers.—I did not use any one type of appliance. I used a combination or modification. I first started movement of the tooth out of the alveolar process and its impacted position in the molar region with a Jackson appliance. I made the Jackson lingual appliance with the loop wire extending distally to the second molar, that is, curved around the second molar from the labial to the buccal with the loop, the end of the loop wire being raised against the surface of the canine. That gave pressure from distal to mesial. It was impossible to put any attachment up to the canine in the position it was in, so that this wire penetrated through the gum tissue through its own force, and rested against that tooth, and in three month's time I noticed considerable movement mesially, although it did not move bodily. So I made various changes in the loop of the Jackson appliance until I got bodily movement sufficient mesially, so that the crown portion of the canine tooth was passed beyond the gum tissue. After that I made a band attachment fitted to the canine crown portion, then with the Case system of extending gum expansion from the band and the lower extension to the tip of the canine crown, I got

reciprocal movement, moving the canine bodily with the gum attachment and holding the crown portion in its position until I got upright movement of the canine. By that time it was opposite the first premolar. I could continue then with this sort of appliance, making various modifications because complications had set in at the time. The canine had entirely passed beyond to the alveolar process and was only held in position by gum tissue. As a result it was very loose and had to be handled very delicately, and it was quite painful at that time on account of pronounced pressure of the cheek and buccinator muscles.

A Member.—What about the vitality of the pulp?

Dr. Rodgers.—That I do not know. I have not been able to find out. I have made tests and I am inclined to think the pulp is alive. The gum tissue surrounding it gives me a false response. There has been no unusual pain experienced on part of the patient. I am anxious to know the condition of the pulp. I have the crown portion protected by this arch, and I am not able to get the response from the muscles I want to get.

A Member.—Have you tried the x-ray?

Dr. Rodgers.—Not yet.

A Member.—Did you try the faradic current on it?

Dr. Rodgers.—Not yet. I have not been able to contact the crown of the tooth with the faradic current. I tried thermal changes, but the response may be due to the natural soreness of the tooth or it may be due to the pulp. I am sorry I can not give you a definite statement as to the condition of the pulp at the present time. I am anxious to know what became of the tissue in the blood vessel in connection with moving the tooth so great a distance.

A Member.—What is the age of the patient?

Dr. Rodgers.—She is a young lady fourteen years of age. On the opposite side we had an impacted tooth, and with that the question of proper alignment came up.

A Member.—What is the condition of stability of the tooth at the present time?

Dr. Rodgers.—At the present time it is not very firm. If I give nature a chance there may be a regenerative process and it will again become firm, but the stability of the tooth at the present time is not very firm. That is why I have a small .020 arch retaining it.

A Member.—Is the root of that tooth placed between the lateral and bicuspid lingually?

Dr. Rodgers.—It is back of the tooth in protrusion buccally. There is beautiful alignment with the gum and rest of the roots of the teeth. There is a little inflammation of the gum tissue over the root portions, but that is what you might expect with such an extensive movement, but the gum tissue from the canine back to the molar is quite normal.

A Member.—Is the bone over the labial surface of the canine now?

Dr. Rodgers.—Nothing but gum tissue. If we let it alone for two or three months there may be regeneration, owing to the cementum and the conditions that are seemingly favorable.

Dr. Dewey (closing).—It seems to me, the gentleman from California (Dr. Robinson) misunderstood the title of my paper, which was "Some of the Principles of Regulating Appliances," and not a consideration of appliances. However, owing to the fact that some of the members have been inclined to bring up the question of appliances to illustrate their remarks and say something with regard to the principles of these things, I will take this occasion to say a few words along that line.

I did not criticize the use of the small wire, the .022 or .020 wire, but if you remember I made a plea for stabilization of the anchorage construction of the regulating appliances separate and distinct from anchorage, and I made the further plea for individual tooth control. Dr. Robinson seemed to think that my remarks were a criticism of his appliance where he used loops. There was no more criticism of his appliance where he used loops, or where he did not use loops, than any of the other appliances, whether it be a labial or lingual appliance. The question of loop in an appliance makes it impossible to have the direct application of force. Whenever you begin to straighten the loop in an appliance, just at that time your appliance may be out of alignment and you produce a change; you lose control, and if you use careful measurements with calipers you are still uncertain as to what force you are producing on the molars.

Now, I made a plea for individual tooth adjustment with finger springs, as was shown yesterday. The loop appliance was shown in one paper which I criticized just as much as the appliance used by Dr. Robinson. With the tube and pin appliance, when you open the loop you change the adjustment between one tooth and you change the approximating tooth. It is impossible to do otherwise. Then if you have a small

alignment wire, labial or lingual, .022 or .020 of an inch, with no other provision to control the molar anchorage, the minute you exert force on the malposed tooth you get force on the anchorage tooth. The fact that you have to use an attachment on the anterior part of the alignment wire to keep it in position is a plain admission of the fact that the thing is tipping. Whenever you tie the lingual alignment wire to the anterior tooth or put it on an anterior band to hold the lingual wire, you are tipping the molar, or the alignment wire is so flexible that it is slipping, and the minute it does that it loses the direction of the force that you gave the .020 alignment wire, lingual or labial. If you use it in accordance with the principle suggested and stabilize the molars, so that you can adjust the small gauge wire to the movements, you will not have reaction on the molars in the direction you do not want it.

The gentleman from San Francisco claimed that I advocated large alignment wires. I advocate alignment wires heavy enough to control the molar anchorage, and I contend that you can not control molar anchorage by the use of .020 alignment wire unless you use some measure for stabilizing anchorage. The minute you bend it in at one point it flexes out at some other point. If you can stabilize the anchorage in some way and use smaller wire, the better it is for you; and it may be small enough to be bent if you have the molar anchorage stabilized; that is all I contended for. My friend from Los Angeles stabilizes his anchorage, and Dr. Waldron stabilizes that anchorage for small gauge alignment wires which is the proper principle, for from there on, you can produce force on the tooth without disturbing the rest of them. The advantage of finger springs over loops in an appliance is when you attempt to straighten out the loops. It does not make any difference to me what style of loop of appliance you consider, it is a dangerous proposition if you try to get force in a straight line.

DEMOCRATIZING DENTISTRY*

BY ALLEN HOLMAN SUGGETT, D.D.S., SAN FRANCISCO, CALIF.

WHEN England called her first three million men to war, one million of them were rejected on account of their teeth. One million out of three—one-third. This meant that one-third of the English people were unfit—on account of their teeth. At any rate, that's the way England saw it.

England then awakened to a realization of the importance of dentistry.

England had to wake up, and so must Italy and France, all Europe, and the civilized world, including the United States, including the dentists of the United States; including even the American orthodontists.

The American dentist is the leading dentist in the world. Even efficient, self-sufficient Germany had, and still has, an American dentist for the Kaiser; for the Kaiser, the Junkers and the war lords. In all the great capitals, Americans are the dentists of the rich, the aristocratic, and also the scientifically informed. There is no doubt at all about our social and professional standing. We have made ourselves and our country the world leaders in science, art, and in the business of dentistry, and the leading American dentist is the orthodontist.

But this boast is uttered here in this presence, not to boost our pride (and our prices), but to recall very humbly to mind, the reason for our high eminence, and to add to our burden the full weight of the leader's responsibility.

The American orthodontist is the leading dentist in the world because he happens to be practicing and pioneering toward preventive dentistry; not because he is a great and good man, you understand, but because, almost by accident, he finds himself working in the direction in which the world seems to be moving. No matter, his obligation as a leader is, none the less, to lead; not merely to glory in and profiteer upon his chance, but deliberately to accept the leadership, make conscious to himself and to the world the end he is being driven toward and boldly and strategically to organize our very artful science into a socialized social service.

What is the end we and the world are being driven toward?

The idea that is being burned and bled into mankind in this fierce crisis is, that it is nations, not merely armies, that make war; that it is the people, the whole breed, not only fighting men and the favored few, that must be fit to survive—whether in war or in peace; and that hereafter preparedness will consist in the development of a general, all-round good condition of the race. In a word, we are being shot, shelled, gassed, taxed and scared not back, but forward, to the social point of view.

Two million Englishmen rejected for the front in France—the third of the

*Read before the Eighteenth Meeting of the American Society of Orthodontists, Chicago, Ill., August 1-3, 1918.

English people unfit to fight, were equally unfit for the service to which they were sent back behind the lines. They were unfit mentally, physically, morally to fight, to work or to breed, this rejected third, and I can imagine, can't you, the condition of the two other thirds?

The English people are unfit, and the English people are typical.

We have in California a warden, James A. Johnston, who discovered that the "bad men" in his penitentiary, the troublesome prisoners, were practically all sufferers from bad teeth, bad eyes, bad other organs. They were unfit. He had their physical defects attended to, and his troubles with them were over. Most of the "bad" prisoners became "good." They were fit.

Some one spoke of it as "good work."

"Yes," said the warden, pointedly, "it is good work, but too late, too late!"

If it had been done in time, those prisoners might not have been there at all. That's what he meant, this wise warden; he was suggesting the scientific thought that maybe we imprison men and hang them for having a toothache or for not having glasses. He was suggesting that maybe the dentist, the oculist, and the physician may take the place of the warden, and of the policeman, and of the criminal judge, after the war.

And Dr. Ebersole, a truly leading dentist, has suggested how. He has suggested that we deal early with weak or sick children, instead of late with bad men and women.

You know his report upon the experiments conducted in the Cleveland public schools for the purpose of ascertaining the value of healthy conditions of the mouth. It shows that the United States, the leader in dentistry, is as "bad" as England. Ninety-seven and a half per cent of the public school children of this country have diseased or faulty mouths. That is nearly one hundred per cent, nearly three-thirds of our young people.

A series of experiments on twenty-seven children showed an average increase in working efficiency of 99.8 per cent, nearly 100 per cent again. How did he get this result? Easily: "The increase (of fitness) was due," says Ebersole, "to the correction of the faulty conditions of the mouth and the teaching of the correct care and use of the same."

Read the individual records in this report on those twenty-seven cases; remember that they represent millions (nearly 100 per cent) of our children; note well their physical, mental and moral condition before and after the treatment, and you will achieve for yourselves some sense of our opportunities as dentists to beat the hospitals, jails and asylums, and to contribute to the development of a people fit to fight. And, let me say, in passing, that a world of peoples perfectly prepared for war, would be not only prepared also for peace, but they would be too intelligent, too scientifically led, to have wars. For wars are merely bad cases of malocclusion due to determinable causes and therefore curable, whenever we are ready, we scientific leaders to lead to the application to war and poverty, prostitution, vice and crime, of the methods of prevention used now, for example, by us orthodontists.

The Dental Committee of the Bridgeport Board of Health in the report of results of work done in the St. Vincent Orphan Asylum, gives another boost,

not to our pride, but to our sense of useful, optimistic obligation; to practice and to teach prevention.

Dr. Fones had prophylactic work done upon those orphans. Dental nurses cleaned the children's teeth and mouths thoroughly, twice a year for four years. Decay was decreased from 85 to 15 per cent. And the cost, gentlemen, was 80 cents a year a child.

The accompanying table of statistics which this report carries indicates that the mouth is the opening to other evils and to other reforms. I do not want to exaggerate the importance of one profession; but I want to emphasize the importance of the physician, the oculist, and the teacher, and all the servants of democratic society, but the results of Dr. Fones' care for the mouths of those orphan children do, as a matter of scientific fact, indicate that, not only caries, but diphtheria, mumps, scarlet fever, pneumonia, measles, etc., diminished and finally disappeared from among those children under dental treatment.

	1907	1908	1909	NOV. 1910	APR. 1911	APR. 1912	APR. 1913	APR. 1914	APR. 1915
	1908	1909	NOV. 1910	APR. 1911	APR. 1912	APR. 1913	APR. 1914	JAN. 1915	
Diphtheria	6	2	1	0	0	0	1	0	
Mumps,	8	3	10	4	0	0	0	0	
Scarlet fever,	17	8	12	8	0	0	0	0	
Pneumonia,	3	5	4	6	0	0	0	0	
Measles,	24	50	40	25	0	0	6	0	
Tonsillitis,	19	16	8	3	0	0	0	0	
Whooping cough,	7	2	2	0	0	0	0	0	
Chicken Pox,	15	17	10	6	0	0	0	0	
Croup,	4	0	0	0	0	0	0	0	
Tuberculosis of eye	*—	—	—	—	1	0	0	0	
Tuberculosis of lungs	—	—	—	—	1	0	0	6	
	103	103	87	52	2	0	7	6	

*Work was started in November, 1910, and in April, 1911, the mouth of the last child had been put in order. Study the above table and note that for nearly four years the diseases of children have been practically eliminated. The six cases of measles occurring during 1913 were caused by a new child whose mouth was in a bad condition on entering, and the children infected were all in need of additional dental service. The one case of diphtheria was also from a new child with bad teeth.

Dr. Ebersole's results also show striking improvement in general health. These two experiments are leads for us leaders in our leading profession. We are busy upon repair work; we are busy and we are late, like the warden. Dr. Fones and Dr. Ebersole began early—upon children. Of course, they, too, are late. They, too, are repairing damage done. As a citizen, I have been led by my professional training in scientific methods, to see that we must as a nation go farther back; we must begin with the parents and we must correct not only the teeth, but the faulty, disease-bearing social and economic conditions, which depress the families of the American people. Upon that job, however, all the professions must meet and labor together with statesmen and with the people for a scientific treatment of all forms of malocclusion. But today, I am a dentist meeting with dentists at a convention of orthodontists—the leaders of a highly specialized profession. What can we, as leading specialists, lead to?

We can follow and we can thus lead dentists to follow the lead of Dr. Fones, Dr. Ebersole and others, toward the democratization of dentistry and

especially of preventive dentistry. We can support and promote other such investigations, spread some knowledge of the condition of the mouths of the people and of what the meaning is of foul mouths to the public mind, to public and private morals and to the physical strength of the American stock. We shall have to go on with our private practice, doing our belated repair work for the select few who can pay the price determined by a social condition in which the demand for dentists is well nigh universal, and the regular supply very, very limited. And we shall have to go on making our foolish war, I suppose, upon the quacks who are the natural products of the abnormal dental market. War, even the war of the dentists, will continue so long as the causes of war continue. And so the quack, the irregular grafting, painfully painless dentist will continue to maltreat the poor so long as ignorance and poverty exist. But we can see, with our scientific insight, that we can best fight the dental quack by making war upon ignorance and poverty. That is the great war, and our part of that great war is to labor steadily, out of office hours, back of the lines, to induce all cities, counties, states and nations to follow the lead of Bridgeport and Cleveland, Detroit and Buffalo, and the California penitentiaries.

I say cities, counties and states because, as a citizen again, but with a professional eye upon the deeper lying economic problem, I want to see all these problems of democracy solved democratically, by the people, not by philanthropists, not by charity. So I will suggest that along with our individual propaganda of dental knowledge and scientific methods, we urge on the taxpayer, provision for the training of dental nurses to be employed in nurseries, homes, schools and colleges, with dentists to supervise, correct and repair.

This is our special part, as citizen-dentists, in the general social task as I see it; and the experiences of England and of Europe and of the United States Army with soldiers' teeth, indicates that it is a great part. But as leaders, as strategists, we shall be fit and fine, if we remember always in all humility, that our part is only a part of the whole new vision which is breaking through the storm of this dark world war; care for the people, regard for the race, a sense of the need and of the desire for the improvement of the breed of man.

DISCUSSION

Dr. B. E. Lischer.—The very title of the paper to which we have just listened is suggestive of the future, a vision of the dentistry that is yet to be, and it implies that the practice of today is not all that is desirable. Indeed, if one were to formulate an equally terse phrase with similar regard for alliteration, one might speak of present day practice as "Dollar Dentistry."

But "underneath all now comes this word, turning the edges of the other words where they meet it. Politics, art, science, commerce, religion, customs and methods of daily life, the very outer shows and semblances of ordinary objects—

"The rose in the garden, the ax hanging behind the door in the outhouse—

"Their meanings must all now be absorbed and recast in this word or else fall off like dry husks before its disclosure.

"The politician turns round upon himself—like the scientist, he acknowledges his brain baffled by the problems; he reaches his hand for help to the hand of the People;

"The commercial man turns round—the firm ground gives way beneath his feet also; to give now seems better than to get—and what sort of trade motto is that?

* * *

"In all directions gulfs and yawning abysses,
 "The ground of society cracking, the fire showing through,
 "The old ties giving way beneath the strain, and the great pent heart heaving as though it would break—

"At the sound of the new word spoken—

"At the sound of the word *Democracy*."

Dr. Suggett has called our attention to a number of facts that are fundamental to the formulation of professional policy. The problems involved are very clear and may briefly be stated as follows:

1. Professional policy ought always to be in advance of legislation and should guide the wider applications of practice. Representative organizations, particularly national and state societies and institutions of learning should always regard assistance in this matter as a sacred obligation.

2. The dire need for the extension of dental service to all the people has been conclusively demonstrated. "We must search our hearts and confront our traditional optimism with the brutal facts of life as it is." We must universalize *democracy*.

"A few decades ago, we might have turned our backs contemptuously on such a thought. But an enlarged experience of the world and a recognition of imperfections in our own political and social life have made us more humble and thoughtful. We are beginning to realize that democracy has been more a faith than a reality."

3. Educational institutions must be expanded and made more truly representative, and organizations like our own must urge them to advance the status and increase the facilities for the teaching of dental science.

"Institutions criticize themselves by their results, just as do machines, and blindness to the nature of these results can not be expected of rational beings whose happiness is bound up with them. So long as the conservative can not demonstrate that our institutions are perfect, he must expect this constant inspection of the social machinery. It would indeed be strange were it otherwise; the wonder is that, with such obviously faulty results, the amount of complaint has been so small. The reason for this relative paucity of complaint has, of course, been psychological. Very few individuals are able to separate themselves from the institutions of their day sufficiently to step back and watch their working. Such an act requires a certain degree of abstraction, a consciousness of institutions as human instruments which can be changed. Yet this objective, shrewdly critical attitude is becoming pretty general with the increase of education and the growth of democratic sentiment, and bids fair to spread to the masses who have until now been in society but not genuinely of it. The consequence of all this is the rise of a critical, experimental spirit which is not enamored of institutions but studies them in a scientific way and is little likely to be put off with choleric assertions that man has stumbled upon the best of possible organizations. Every feature of society must, from now on, defend itself before the bar of a reason steeped in facts and hopeful of improvements."

4. The reason why the masses do not now avail themselves of dental service is because the organization of our industrial society has been on an individualistic, *laissez faire* basis, which tends more and more toward "wage serfdom," poverty and ignorance.

As long as we regard human labor as a commodity, and fail to consciously organize the constituent elements of our social and economic life, we must expect disorder, waste, antisocial competition and unmerited poverty; nor can we "hope to tap new energies which are now latent," or "make labor-saving devices really saving of labor," or "procure a fair degree of leisure for each individual," or "achieve a better distribution of human costs."

Thanks to the Reconstruction Program of the British Labor Party, we are now headed toward a new world. "It has electrified liberal America as the speeches of President Wilson have electrified liberal Europe. And if liberal Europe looks to Wilson today as a Moses, we in turn look to the British Labor Party's program as the Ten Commandments. Yet the strength of them is that they are not commandments, nor dogmas, nor final things, but a successful attempt to strike at the roots without attempting the impossible, and to be constructive without being trivial and merely ameliorative. It is that thing for which we have waited so long—a program practicable enough for today and tomorrow, yet radical enough to bring our ultimate destination within view."

"The four pillars of the house that the British Labor Party proposes to erect, resting upon the common foundation of democratic control of society in all its activities, may be termed:

"(a) The universal enforcement of the national minimum; (b) the democratic

control of industry; (c) the revolution in national finance; and (d) the surplus wealth for the common good.

"Is it a dream.

Nay but the lack of it the dream,
And failing it life's lore and wealth a dream,
And all the world a dream."

Dr. R. Ottolengui.—There are two lines in this paper to which I would respectfully take exception. All the rest of it I will merely endorse. The essayist says, "The American dentist is the leading dentist in the world, and the leading American dentist is a good orthodontist." This statement reminds me of the man who had married a second time. About two weeks after the honeymoon, he took his new wife out for a buggy ride, drove to the cemetery and visited the grave of his first wife. Looking down on the grave, he remarked, "She was the best woman in the world. She was the best woman in the world." Wife number two remarked gently, "Charles, you mean she was one of the best women in the world." "No, I mean she was the best woman in the world," and the "honey" part of the honeymoon ended right there.

I would now like to discuss briefly some of the examples as referred to by Dr. Suggett. He calls our attention to the experiment made in Cleveland and gives us some statistics in regard to that experiment. Let me say then, that if we are going to democratize orthodontia, we must not rely too much on that sort of experiment. Experiments should be carried on along lines as nearly parallel to the actual conditions as possible so that the results will be real and not imaginary. We had statistics in regard to the Cleveland experiment which were not literally correct. They were correct as applied to the 27 children, but omitted from that calculation was the fact that at the start there were some 80 or 90 children. Little by little these children dropped out or were left out and only 27 went through with the entire curriculum upon which these statistics were based.

For this reason a new experiment was tried, of which the essayist is apparently in ignorance. This was undertaken by the Second District Dental Society in Brooklyn. We considered the Cleveland experiment inadequate because we were going to talk to the municipal authorities about the effect the dental service would have upon the school system and upon the scholars. To prove anything it would be necessary to conduct an experiment in such a way as to appeal to the municipality as practical. Consequently, we abandoned the idea of inviting a number of dentists, especially skilled, or fitted, or inspired, or enthused, to do this work. Nor did we select a limited number of children who were anxious and willing to go through with the test and then base statistics on work done in that way.

We went to the Board of Health and said, "Here is a list of fifty dentists, located in all parts of the city of Brooklyn. Will you send two children to each of these dentists from any school you please, from a school which would be most convenient for the children? Will you keep their scholastic records before you send them and will you keep their scholastic records during the time of their attendance and will you give us the result after we have taken care of these children for six months?" We found out at once, when 100 children had been selected and told that they could have free dental service, that nevertheless they did not appear at the offices. We showed by this experiment not only the value of dentistry to those who would accept it, but the difficulty of applying it in schools under a system of this kind. By analysis we discovered one reason why these children did not come was because many of them could not afford the time or carfare. Then the dentists agreed not only to give services but to pay their carfare. In spite of this, however, we never did render service to 100 children any more than the Cleveland dentists did. However, we did serve 68 children and about half of these were reported by the orthodontists to have improved physically, mentally and scholastically. My own personal experience was peculiar, my office being in New York. The two children first referred to me failed to reach my office at the first appointment. I notified the board and two more children were allotted to me. Then on the following Saturday, four children arrived. As they were willing to come, however, I did the work. The point of interest to us is that out of the four sent to me, one had a pronounced Class III and one a pronounced Class II deformity. I thus immediately arrived at the relation between dentistry and orthodontia in school work. While it was possible for me to relieve the child from suffering in the Class III case by treating the decayed teeth, nothing that I could do as a dentist in six months would improve that child's mouth and as the child had a

very bad masticating arrangement, the filling of her teeth could hardly be expected to improve her physical condition. Most of the statistics that we have had are based on the examination of the mouths for caries. If a similar investigation were made in regard to metabolism, I believe that the magnitude of the orthodontic work required by children in the public schools would be something appalling and there would be the added difficulty of instituting proper prophylactic measures.

Another difficulty in democratizing either dentistry or orthodontia is the size of the community, especially in a large city like New York, where we have eight hundred and fifty thousand public school children. The children do not reside long enough in one locality to carry through the system of treatment, and the only solution to this problem is compulsory dental service in an infirmary located in the school building.

This week we are to dedicate for the first time I believe in the history of the world a monument placed in a public park in memory of a dentist. I firmly believe and prophesy that a second monument will be placed and dedicated in memory of a dentist. After the Cleveland experiment had failed to satisfy hard-headed business men in other parts of the country that dentistry in public schools would be worth the cost, Dr. Fones undertook another experiment in Bridgeport. He trained a number of girls to do prophylactic work and then put them to work in the schools. The first year they gave him \$5,000 for this experiment. The second year they gave him \$10,000. The third year they gave him \$12,000. This year he asked for \$25,000 and they gave him \$35,000, proving in a practical way that they had become convinced. Dr. Fones will shortly be able to publish the result of five years of this kind of work and when these statistics are published, we will have a genuine foundation upon which to argue as to the advantage of democratizing dentistry.

Dr. S. P. Cameron.—I fully enjoyed listening to Dr. Suggett's paper and to Dr. Lischer's discussion, and also to the statistics presented by Dr. Ottolengui.

About six years ago I was in the position of taking care of an institution in which there were two hundred children that came and went every year. At that time we were all enthusiastic over the fact that malocclusion was caused by adenoids and enlarged tonsils. In starting in to go over these boys and making an examination of them in the college, I saw boys with magnificent sets of teeth, sets of teeth as good as you ever saw in your life, and their tonsils would almost choke them. When I started to examine the younger children I found they had beautiful developing conditions. I looked for adenoids and I found them. But previous to the time of my going there to take care of these fifteen hundred children one man went there one day a week at 4 o'clock. He had one little room, with a chair, cabinet, and so forth. Today there are five people spending all their time in the care of these children. There was no one among the medical staff who was paying any attention to these children until 1911. Operations were performed for the removal of adenoids and tonsils by physicians. The second winter we were there, in the boys who were sent to the infirmary, we reduced their oral troubles thirty-three and one-third per cent, and the next year when the boys were sent to the infirmary, there was a decrease of fifty per cent. A bulletin was published showing the value of the work that was being done. They found, as Dr. Ottolengui has pointed out, that the standing of the boys in school from a mental standpoint had been increased very materially since their teeth had been cared for.

An interesting fact to me was that the ages of these boys ranged from six to ten. We got them at an average of eight.

I have found that in taking up the practice of orthodontia in these children most of my work is in the grammar school, the boys ranging in age from eleven to twelve or thirteen. I have treated but two cases since I have been there (and I have treated something like over three hundred cases) that ever went from the grammar school and got into the high school and graduated. The boys that go there and graduate are different types of boys. They are different in their development both mentally and physically and in every other way. I found when I started with these boys with irregularities of the teeth in the grammar school, before they got into the grammar school they would go back into the technical school. They never got into the high school. It is very important for us to bear in mind that orthodontia has something to do not only with the development of the child but with its whole economy.

Dr. Julius Hovestadt.—This subject is extremely interesting to me. About fourteen years ago I showed before the Massachusetts Dental Society the beneficial effects on children by the proper care of their teeth. I had then a record of eleven years work. Dr.

Burns and several other writers had given me credit for giving the first correct record of this work. When I started the work in an orphan asylum I found there were fifty-five patients from the age of two to sixteen or seventeen years. There was a great deal of trouble among the inmates. There were diseases of all kinds. The home was never free from some form of disease of one kind or another, and many times they had some very serious contagious diseases, and it took us just about four years to wipe that out completely. My record, which was published in the *Dental Cosmos* in May or June, 1904, shows that the expenses for the home for medicine and medical services were reduced to something like three dollars and four dollars a year, whereas, these expenses in previous years ran up to one hundred dollars, and contagious diseases have been entirely wiped out. I think that was a remarkable record. I did not know what I was doing at that time; I had no idea that I had obtained such results till one day the superintendent, when I asked for the records, showed me these figures.

I really think that we can believe the report presented by Dr. Suggett. and that these things are possible because they have been proved by many other men besides him.

Dr. George F. Burke.—I regret very much to hear Dr. Ottolengui speak disparagingly of the mouth hygiene work done in Cleveland under the direction of Dr. W. G. Ebersole. I had the good fortune to be a visitor at the Marion School during the period his work was being done, and was very much impressed with what was being accomplished, though I am not in a position to support the accuracy of his findings, neither would I care to question his figures without being in possession of the facts.

The truth is that Ebersole was the first man in mouth hygiene to produce something tangible in regard to this subject, so as to impress those most interested in the value of clean, healthy mouths.

He focused the attention of both the dental and the medical profession, also the laity, on the mental and physical improvement made on the members of a class of school children, whose mouths were put in order and instructions given as to the proper chewing of food.

In his splendid volume, entitled "How to Live," edited by Irving Fisher, of Yale University, there is a chapter devoted to Ebersole's work in Cleveland, and it is a pleasure to find that due credit is given to those who so richly deserve it.

Dr. R. Ottolengui.—I rise to correct an erroneous impression which I seem to have made. I do not think the stenographer's notes will show that I criticized the Cleveland experiment at all. I was heartily in sympathy with Dr. Ebersole. I was friendly to the movement and approved of what he did. What I said was, and I say it again, that the experiment was not convincing because the manner in which it was conducted was not such as could be carried on practically in the schools thereafter. I did not say that the statistics were incorrect. They were absolutely correct so far as the twenty-seven children were concerned. Dr. Ebersole deserves credit for originating this experiment, but there was an error in it because of which the experiment failed to convince laymen and it was because of this fact that the Second District made their experiment. Had the Second District been the first to inaugurate the experiment, they would very likely have made mistakes also, but coming after the Cleveland effort, they were able to avoid the mistakes made there. But, of course, Dr. Fones' experiment is better than all because he actually does the work in the schools.

Dr. Suggett.—I am not surprised that children did not come to Dr. Ottolengui for charity service on their teeth. Children do not like dentistry and their parents do not like charity. Everybody detests charity, fortunately; it is not a solution of any problem.

But children go to school and they are there to be taught what they should know, one of the things that should be taught them, I hold, is the care of their teeth; as a scientific solution of the problem, not only of the teeth, but of other evils which develop out of bad teeth.

As to the effectiveness of the solution the cautious doctor warns us that the few experiments we have made are not enough to establish the optimistic conclusions which the experimenters and I have drawn. That is true. We have not made as many experiments as we should. That is my point. I want more such experiments started to make sure we are right; to establish scientifically our theory that expert, free instructions in the public schools in the practical care of the children's teeth will enable them to learn their lessons better and be more optimistic and capable and clearheaded than our generation. But I want to leave with you this argument for human cheerfulness, if not for scientific optimism; to wit, all the knowledge we have, and all our experience, all our experimenters and all our experiments so far made, go to show that we are on the right track.

COMPROMISE TREATMENT*

BY A. C. GIFFORD, D.D.S., OSHKOSH, WISC.

ABOUT two years ago, I gave a paper before this society on the subject of "Compromise Treatment."† Some of the most interesting cases under treatment at that time, have since been completed, and it might be of interest to you to know just what results have been accomplished.

I believe that compromise treatment should always be used conservatively. Not every case of missing teeth, either congenitally or by accident or disease, will profit by this method, and judgment and discretion are needed to determine just what cases can successfully undergo this form of treatment. Generally speaking, compromise treatment should be advocated only during the years of greatest bone development, especially if much destruction and building of bone is necessary.

Substitution for missing teeth has long been a source of study, but I will venture to say, that if the case is taken early enough, compromise treatment offers the most effective solution to the problem. In the case of missing teeth, congenitally or otherwise, the natural procedure would be to move the remaining teeth back to their normal positions, which would be absolutely correct from the standpoint of normal mesiodistal relation of the teeth, but what advantage is there in having the teeth in normal mesiodistal relation and supplying the missing tooth with one of porcelain, causing mutilation of the teeth on either side of the space and future trouble. What orthodontic treatment really means in cases of this sort, is, I think, not always a normal mesiodistal relation, but the conservation of sound, live tooth tissue. It is either a case of normal occlusion with artificial restoration, or a compromise occlusion without mutilation and artificial substitutes. By this form of treatment, missing teeth can be provided for, and give, it seems to me, as good and often a better appearance than any substitute that might be supplied in the space opened to the normal tooth size, and in many cases the operation would be simpler, provided the conditions were the same. In the case of a child, you can readily see that it would almost be out of the question to successfully place an artificial tooth in a space opened to the required size, for the pulps of the teeth are large as a rule and should we wish to make restoration for the missing one, the substitute must be so constructed that it will not endanger the life of the other teeth. Temporary replacement would be the only solution to the problem. By compromising, we can avoid this difficulty, and it is one reason why I am so strongly in favor of this treatment for missing teeth. It would not be so difficult to successfully replace a missing tooth with a substitute, if we could do it ourselves, for we know

*Read before the meeting of the Alumni Society of the Dewey School of Orthodontia, Chicago, Ill., July 30-31, 1918.

†"Compromise Treatment, or Conservative Orthodontia," published in *International Journal of Orthodontia*, Vol. ii, No. 4, April, 1916, pp. 197-201.

what we want and what the results must eventually be so far as the physiologic tooth movement and occlusion are concerned. The general practitioner and crown and bridge man also have their ideas, and occasionally disagreements arise and we do not get exactly what we want. If, however, we are to follow some fixed rule, as has been the custom with a great many men in our specialty, we can, of course, resort only to the placing of some sort of artificial substitute.

The illustrations I showed at another meeting were of cases that had not progressed to the stage where you would have any inkling of what I consider a successful compromise. Some of these cases have since been completed and I shall show you in the accompanying illustrations, the results which have been accomplished.

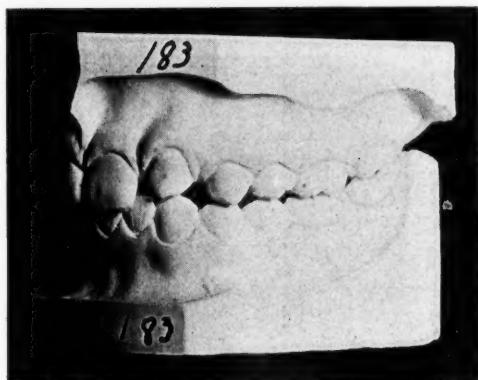


Fig. 1.

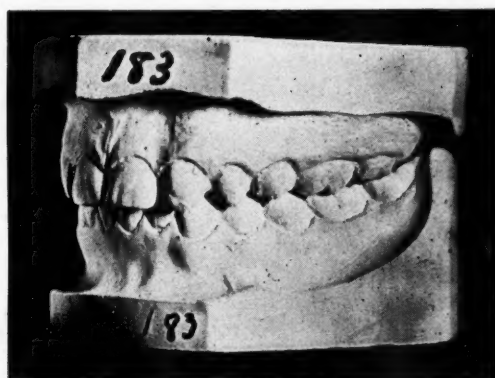


Fig. 2.

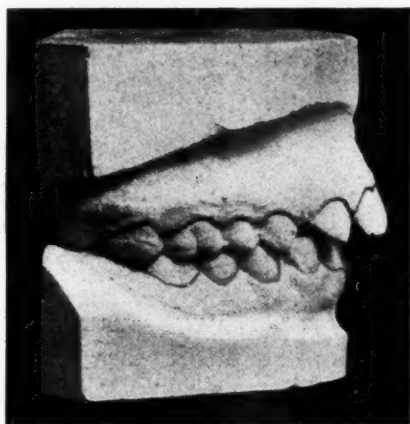


Fig. 3.

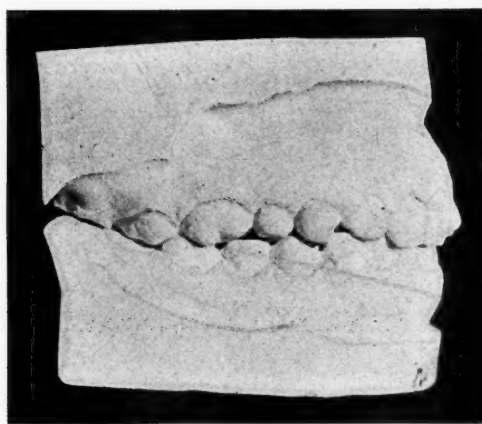


Fig. 4.

CASE 1.—This case (Figs. 1 and 2) has a lateral missing upon the left side, caused by an accident some three months before this model was made. Nature was trying to put the teeth in approximal contact and the space left by the tooth was closing. As the patient was only eleven years old, do you think it would have been good policy to have regained the space? The ideal conservation and compromise is shown in the next picture.

CASE 2.—The next slide shows a congenitally missing lateral upon the right side (Fig. 3). The model shows the upper right posterior teeth just one cusp

mesial to the normal and the upper anterior teeth in labioversion. To have tried to place the molars in their normal mesiodistal relation would have required the moving of the right upper posterior teeth distally and that seemed to me unnecessary and an impractical way of treating the case especially as the lateral would have had to have been replaced. Fig. 4 will show the completed case. The canine has not made the very best lateral, but is it not better than a porcelain one? I am sure it will be more serviceable than any substitute that could have been used.

CASE 3.—We have here a case of congenitally missing laterals on each side. The radiogram showed no teeth in process. (Fig. 5.) This was a hard case to treat as one may imagine, for I believe that the teeth should be moved singly

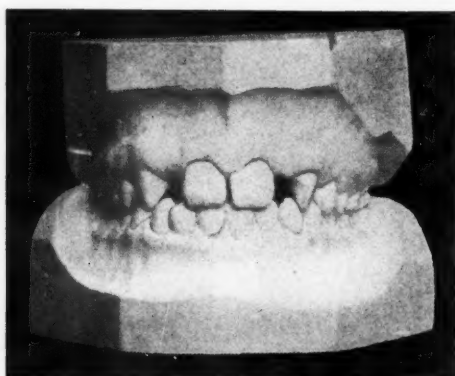


Fig. 5.

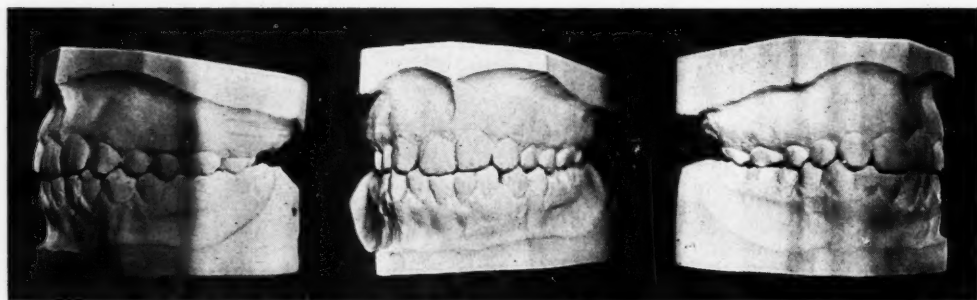


Fig. 6.

and bodily. The left canine being in torsoversion and having a very large root was especially obstinate to treatment. By carrying out my ideas I finally attained the results that are shown in Fig. 6. Some may not believe that this is the plan that should have been followed, but to the conservative mind it will not fall short of ideal results, for I know of no other treatment that would have produced any better.

CASE 4.—In this case (Fig. 7) you will notice that the canines are missing. History gives us the extraction of these teeth when they came in labial to the rest of the teeth. The facial deformity can well be imagined. The young man was nineteen at the time of the application of the appliances, but before I had

finished the case he enlisted for service. The model in Fig. 8 was taken on the day before he left. In the treatment of this case, I proceeded as if it were a regular mesioclusal type. The results I was striving for are plainly shown in the second model of this case.

CASE 5.—Fig. 9 shows the second upper premolars missing on both sides.

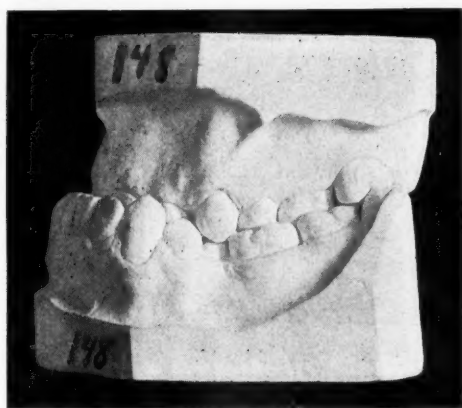


Fig. 7.

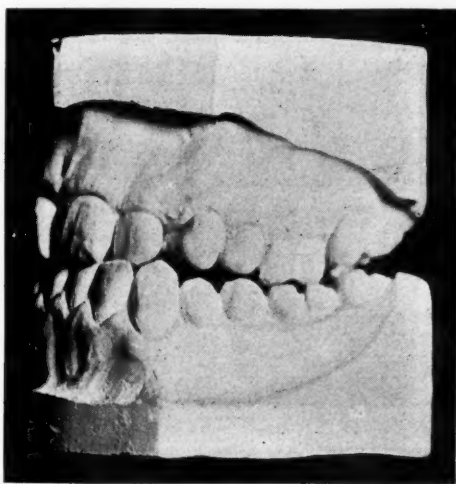


Fig. 8.

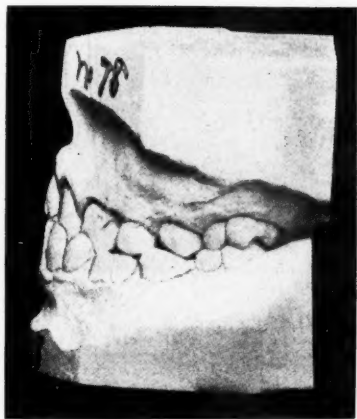


Fig. 9-A.

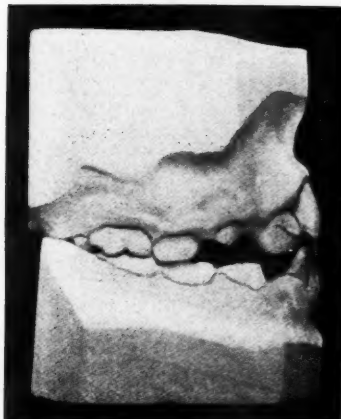


Fig. 9-B.

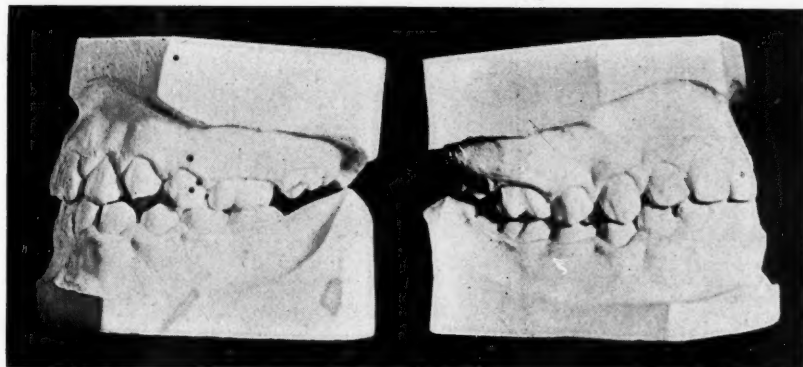


Fig. 10.

At the time the first model was made, the patient was only ten years old and I decided that it would be most advantageous from all viewpoints, to move all of the upper teeth forward by intermaxillary elastics, rather than leave the first molars in their normal mesiodistal relation and open the space for the missing

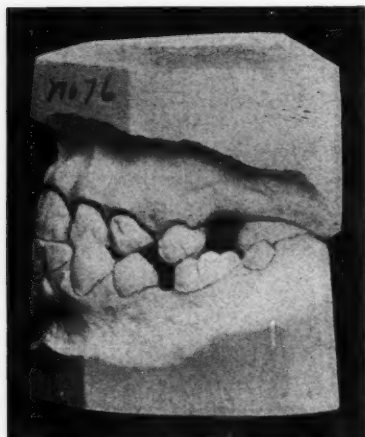


Fig. 11.



Fig. 12.

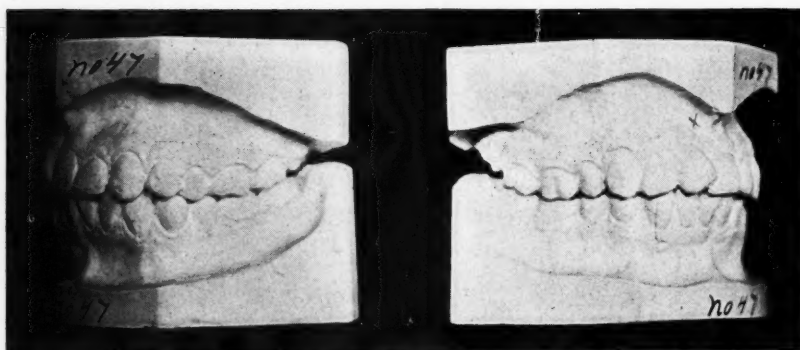


Fig. 13.

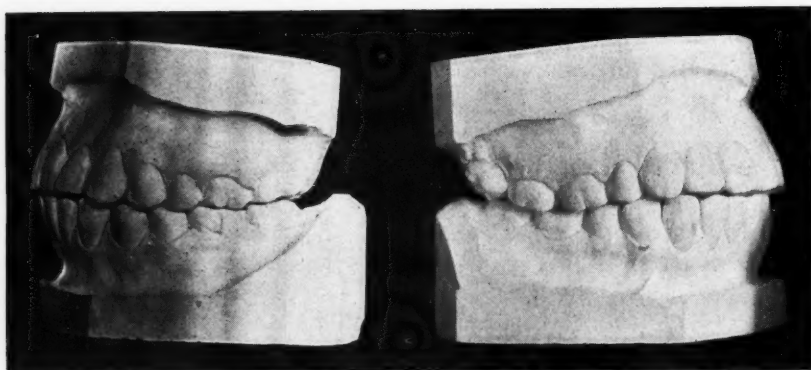


Fig. 14.

teeth. Fig. 10 shows the teeth in approximal contact, but not in as good occlusion as they are at the present time. At the time the last model was made, the teeth had not developed fully and consequently the force of the inclined

planes had not had an opportunity to act. At the time I last saw the patient I noticed a great improvement over this model.

CASE 6.—When the first molars have been lost by disease, if the patient is within the age of bone development, it behooves us to put the second molar in the place of the missing first molar (Fig. 11). It is so easy a matter to place the second molar in approximation with the second premolar in the treatment of cases that I see no reason for retaining the space. The second molar occludes very nicely in the place of the first molar, and when the third molar erupts, I believe it will be a better and a stronger tooth than it might otherwise have been. In fact, after a little while, I doubt very much whether the change will be noticed. This case needed considerable more treatment and Fig. 12 shows what has been accomplished.

CASE 7.—The case that is now shown has a missing premolar upon the right side. The left upper teeth were all one cusp mesial to the normal. The right is also somewhat mesial, but not, in this particular case, the desired distance. The upper teeth on the left, from central to second molar, were moved distally into normal occlusion, after the third molar was extracted, and after the supernumerary was (x) moved, the right half of the upper teeth were moved mesial enough to put all of the teeth in approximal contact. This seems to me logical and I believe I have produced a nice set of teeth without mutilation or an artificial substitute (Fig. 14).

I have only illustrated the use of compromise treatment in the cases of missing teeth, but there are many other ways by which we can compromise and extract a tooth occasionally without any undesirable results esthetically or from the standpoint of mastication. As I said before, one must use discretion in the treatment of cases by this method. The fixed plan of normal occlusion does not always give the results we are striving for, and a little compromise very often relieves our responsibility.

DISCUSSION

Dr. Burt Abell, Toledo, Ohio.—I do not believe I can add anything of value to what Dr. Gifford has said. I think he has gone to a lot of trouble in some of these cases to get better occlusion than I would feel justified in doing. While we take the short way out of it on the older cases, on the younger cases, we do every bit of work that is needed to be done. I do not feel that anybody is justified in so arranging teeth that a patient has to wear what I call a crippled tooth in the mouth. No bridge, or substitute can possibly take the place of the natural teeth. We can bridge to get normal occlusion but why should we make an effort to get normal occlusion if we have not the material there with which to get it? We never can move these teeth into a compromised position—I say that advisedly—and have all of them absolutely occlude as well as they would in the occlusion that was intended by nature. But it is a great deal better to mismatch teeth (I do not know that I want to be quoted on that term) to put them into other positions rather than to put them in normal positions and supply the missing teeth artificially. I am very much in favor of orthodontic compromise treatment if there are missing teeth rather than to put them in their normal positions and have to supply teeth artificially to hold them there permanently.

Dr. William C. Fisher, New York City.—I have nothing to defend. I admit I am guilty. I am very glad indeed that Dr. Abell took the stand he has so decidedly. In the last two years I have been in close touch with Dr. Dewey on almost the same subject, and he goes to the point of sacrificing a good tooth in order to get a compromise, so that he won't have to put in artificial substitutes. If the x-ray shows that a bicuspid is lack-

ing, I will sacrifice the bicuspid in the opposing arch on this side rather than open it up and put in a substitute if the upper teeth are sound and good and the patient is young.

I have one case (I call it a very sad case) that taught me the greatest lesson I ever had in orthodontia, and it taught me the lesson that every man has to have sooner or later, namely, that I did not know very much about orthodontia. That case came to me after it had been in the hands of a specialist in orthodontia, a man who has practiced it exclusively. He had the case for over two years. He had used several appliances, and the last appliance was pin and tube. There was lacking in the lower jaw a bicuspid on each side of that arch. In the upper arch the full complement of teeth was present. They were all inclined to decay. The girl was not strong. She was about twelve years of age. I decided to use Dr. Ellis' appliance, which you may have seen published two years ago, and open the space. When I got the space opened and decided to put in a substitute, I could not bring myself to devitalize the teeth and place in two artificial substitutes for the girl to wear during the rest of her life, neither could I bring myself to construct anything removable with clamps. I then concluded I would go all over my case again by extracting the bicuspid in the upper jaw. Then I had to close in my space, and I assure you that it closed in quicker than I opened it, but I had to use force. At last, after working on the case for over two years I concluded I had secured as fine a result as was possible in a girl now nearly sixteen years of age, and she had been wearing the orthodontic appliance for five years with a slight interval in between. I said to her father, "It is my opinion this child has had all the orthodontia she should ever have; we have not secured a perfect condition, but the removal of these two bicuspid did more for the child in six months than the exclusive orthodontist and general practitioner did in five years.

DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of
M. N. FEDERSPIEL, B.Sc., D.D.S., M.D., MILWAUKEE, WIS.
Professor of Oral Surgery in Marquette University

Clinical Observations Concerning Malignant Tumors of the Jaws. A. J. Ochsner. *Annals of Surgery*, 1918, lxxviii, 136.

Ochsner reports his observation of 100 cases of malignant tumors of the upper and lower jaws from the standpoint of the clinician. The actual cautery was used in every case in a most vigorous manner. Two cases died from hemorrhage from the carotid artery where the tumor had extended into the neck. The oldest one of his cases operated upon by means of the cautery has lived 29 years since the operation and is still in excellent health.

Out of 100 cases, 67 per cent were carcinoma; 16 per cent epulis; 16 per cent sarcoma; and 1 per cent chondrosarcoma. The origin of these new growths was noted and in the cases of carcinoma and epulis the following distribution was found: 47 cases originated from the inferior maxilla; 6 from the antrum of Highmore; 25 from the superior maxilla; 3 from the cheek; 1 from the parotid gland and 1 from the palatine bone.

In the sarcomatous growths the examination showed that 8 cases originated in the superior maxilla; 4 in the inferior maxilla; 3 in the parotid gland; 1 in the soft palate; and 1 in the cheek.

Ochsner believes that the teeth are usually the cause of malignancy of the jaws. He holds that broken-down crowns and sharp projecting roots, together with faultily constructed bridges and crowns, affording a breeding place for bacteria, are predisposing factors.

The frequency of the occurrence of the malignant tumors in the male was found to be much lower than the percentage given by Blair; 72 of the cases occurred in the male, while 28 affected the female. The percentage for the female was considerably lower in the cases of carcinoma than in those of sarcoma and epulis. Of the 67 cases of carcinoma it was found that only 11 were female patients, while in the 33 cases of sarcoma and epulis 17 were female patients.

As to the duration of the condition before the admission of the patient into the hospital, the following facts were determined: 25 per cent entered before the third month; 25 per cent of the cases entered before the sixth month; 23 per cent before the second year; 27 per cent after the second year. In 65

per cent of the cases no statement was made with regard to lymph gland involvement. Of the remaining 35 cases, 25 showed enlarged glands.

The mortality following these operations was as follows: 3 per cent died during the first day following the operation; 4 per cent died before the fifth day; 5 per cent died before the twentieth day; 3 per cent died before the fortieth day; and 5 per cent died after the fortieth day. The total mortality of patients while in the hospital amounted to 20 per cent. All of these fatal cases, except two, were carcinomatous, the two exceptions being sarcomatous. It is interesting to note that in 40 per cent of these fatal cases, a previous incomplete operation or an excision of a piece of tissue for the diagnosis had been performed. In the balance of the cases injection of iodine or oil, application of plasters or acid, teeth extraction following the appearance of the lesion, or x-ray application had been carried out.

Of the 100 cases treated in this series, 15 returned with recurrences. Ten returned once, 1 returned twice; and 4 returned three times. The permanent results of this series of cases have not been determined.

Some Vital Phases of Fracture of the Jaws. C. J. Lyons, *Journal American Medical Association*, 1918, lxxi, 164.

Lyons calls attention to the fact that fractures of the jaws will differ from fractures in other parts of the body in that they are more liable to infection on account of the close proximity of the bacteria-laden fluids of the oral cavity.

He also calls attention in the consideration of infection in fractures of the jaws, to the presence of alveolar abscesses, which may be existing at the time of the fracture or may be superinduced at the time of the injury. This will greatly delay the process of repair and should be eradicated before repair can take place.

Another condition which will complicate healing of jaw fractures is infection of the antrum.

The treatment of fracture of the jaws consists of the fulfillment of three principal indications; (1) reduction of broken fragments; (2) retention of the parts in normal relation; (3) prevention or control of inflammatory processes.

DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Under the Editorial Supervision of

JAMES DAVID MCCOY, D.D.S., Los Angeles—ROBERT H. IVY, M.D., D.D.S., Milwaukee
B. FRANK GRAY, D.D.S., San Francisco

It is the object of this department to publish each month original articles on dental and oral radiography. The editors earnestly request the cooperation of the profession and will gladly consider for publication papers on this subject of interest to the dental profession. Articles with illustrations especially solicited.

RADIUM IN THE TREATMENT OF SARCOMA AND CARCINOMA*

BY G. H. SCIARONI, M.D., M.C.L., FRESNO, CALIF.

IN discussing radium for the treatment of cancers and sarcomas it will not be out of place to first give a brief history of this most wonderful element.

Radium was discovered by Madam Curie while working out a master's degree in her husband's laboratory in 1898. A short time after the isolation of the element, a tube containing a small amount was given to Professor M. Henri Becquerel for experimental work. The tube was placed in his vest pocket to be removed a few hours later. At the time no inconvenience was noted but about two weeks later a burn which corresponded to the size of the tube appeared on the abdominal wall. This was the famous Becquerel burn and from that day to this when those unfamiliar with the action of radium hear of it they immediately think of a burn, and more than one uninitiated pathologist has made the statement that radium cures by burning. Nothing can be farther from the actual fact. It is true that it liberates heat and will burn in the course of time, but a burn is easily avoided when the radium is properly applied. Unfortunately it is not as simple to handle as some other agents, and the technic of its application can only be learned by long and tedious study. The burns that are seen today following radium applications I believe to be due to overtreatment.

Radium is derived from uranium by atomic reduction and belongs to the strontium-barium group of the alkaline earths. When freshly prepared it looks somewhat like brown sugar except it is not crystalline and does not glisten. It has a characteristic spectrum, an atomic weight of 226 and loses a portion of its atom to become a gas called emanation. Pitchblende contains one part of radium to 3,000,000 parts of uranium.

*Read before the San Joaquin Valley Dental Society, May, 1918.

There are a number of radioactive substances, fifteen in the radium group and eleven in the thorium group, any of which may be recognized by (1) their effects on sensitive photographic plates, (2) their ability to produce fluorescence, (3) their ability to ionize an air and, (4) their production of heat. From all of these substances there is an emission of rays, from which their therapeutic value is derived. These are classified according to their physical properties into alpha, beta, and gamma rays.

Of the three types, the alpha particles are the least penetrating, being completely stopped by a thin sheet of paper and not being detectable after passing through three inches of air. They are positively charged minute particles the size of atoms, the action of which we see in a spinthariscopes, a screen of zinc sulphide in front of which there is a small fragment of radium, so small it can not be seen with the naked eye. From a gram of pure radium bromide it is estimated that twenty thousand million of these particles are expelled per second with a velocity of approximately one-tenth that of light.

The beta rays are negatively charged electrons, smaller than the alpha and travel with the velocity of 170,000 miles per second. Their penetrating power is therefore much greater than the alpha particles, it requiring a piece of lead two millimeters in thickness to intercept them. They will penetrate several centimeters of tissue.

The gamma rays are ether vibrations rather than particulate, as are the alpha and beta rays. They have a much shorter wave length than visible light and their penetrating power is extraordinary. Even the interposition of the human body does not intercept all of them. In the therapeutic application of the rays, because of these properties it is possible to use them all together or separate them, as may be desired.

For the purpose of application radium may be obtained in the form of varnish applicators or in small glass tubes further encased in brass, platinum or silver capsules. The latter prevents loss in case the glass tube is fractured. The rays pass from the tubes in radial lines, thus producing a sphere of radiation. The walls of the tube intercept the alpha rays and therefore only the beta and gamma rays are used in the treatment of disease; the dosage depending on the age of the patient, the nature and extent of the condition, the amount of radium to be used, the screening, etc. It is the ideal aim in the treatment of any condition to obtain the same intensity dosage at the point of greatest extension, as at a point nearest the radium.

The rays being given off from a point in every direction their intensity will vary inversely in proportion with the square of the distance. For example, a unit radiation may be obtained in one minute at a point one millimeter distant from the radium that it would take 625 minutes to obtain at twenty-five millimeters. When the rays strike a substance, the substance becomes the source of secondary rays which are similar to the primary beta rays emitted from the radium. It is the action of these rays that is usually responsible for the so-called radium burns, but fortunately by the interposition of rubber dam between the screen and the lesion such can be prevented.

Radium is said to be possessed of a selective destructive action and a general destructive action, and the common impression that it acts by burning

is erroneous. The selective destructive action is advocated because of the fact that a tumor is very often seen to disappear from beneath the skin, after the use of radium, without any apparent effect upon the normal tissues. As a matter of fact, there is a marked selective tendency in this direction and assuming that radiation has a deleterious effect upon all tissues this selective action may be explained in the following manner, which, to me, seems to be the most plausible theory concerning the effect of the rays on normal and pathologic tissue.

First, although the radium produces a certain deleterious effect on all living tissues, the fluids and protective agencies of the body are all constructed to

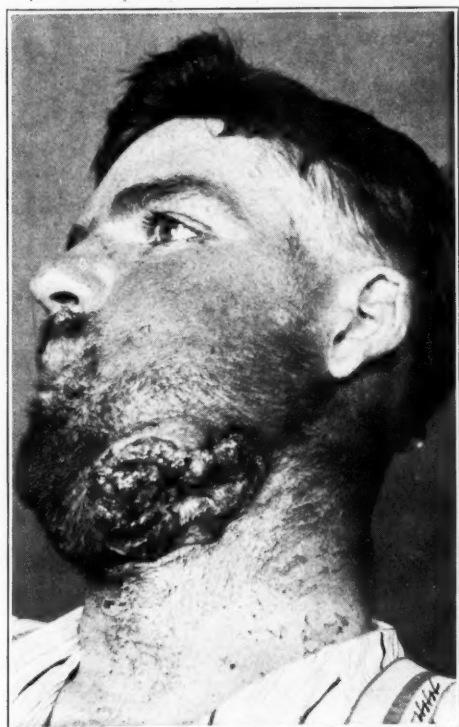


Fig. 1.

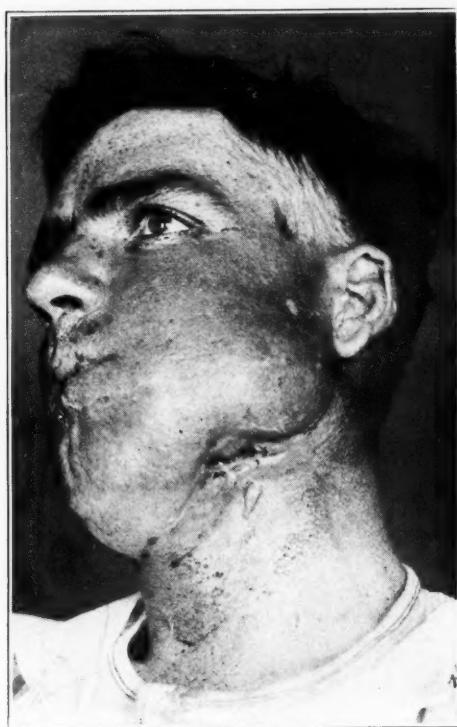


Fig. 2.

help the normal and though weakened the normal cells do not die. Second, the pathologic tissues are weakened to the same extent as the normal, but since the body fluids and normal protective agencies are not constructed in the aid of the up-keep of these pathologic cells they disappear. Another fact concerning the selective action of the rays and the body's resistance is that the tuberculous glandular involvements disappear under radiation, while tubercle bacilli growing in culture in the test tube are unaffected by its rays.

In explanation of the action of the rays in this manner, certain other facts well known to those familiar with the use of radium can be explained. First and foremost, the fact that under identical conditions as regards dosage and application, and identical conditions as regards the patient, we occasionally fail to get a result in one, while in the other the sensitiveness of the tumor is most remarkable. I have seen cases that were apparently absolutely hopeless whose

conditions yielded in a way that seems almost magical; however, in making this statement it is not desired that it shall be interpreted as a plea for very advanced cases.

It would seem that for a cure in malignant disease everything points to an early diagnosis and treatment; yet in the face of an absolute diagnosis of malignant disease, the patient will not always take the advice of the physician who recommends immediate attention, but will go shopping from doctor to doctor, just as we see shoppers go from one department store to another, until some quack guarantees them a cure without the use of a knife. The next time we see them they are in an advanced stage of malignancy with metastases to the neighboring glands and the inevitable end close at hand.

In Fig. 1 is a typical illustration of an extensive carcinoma in the cervico-mandibular region. Fig. 2 is the same case thirty days after treatment.

SUMMARY

1. Radium is the most powerful destructive agent known for tumors.
2. It will reduce many inoperable carcinomas to operable conditions.
3. In the proper hands it will save many lives that would otherwise be hopeless.

The International Journal of Orthodontia

PUBLISHED THE FIFTEENTH OF EVERY MONTH BY

THE C. V. MOSBY CO., 801-807 Metropolitan Bldg., St. Louis, Mo.

Foreign Depots—*Great Britain*—Henry Kimpton, 263 High Holborn, London, W. C.; *Australasia*—Stirling & Co., 317 Collins Street, Modern Chambers, Melbourne; *India*—"Practical Medicine," Egerton Street, Delhi; *Porto Rico*—Pedro C. Timothee, Rafael Cordero 68, San Juan, P. R.

Subscription Rates—Single Copies, 30 cents. To anywhere in United States, Cuba, Porto Rico, Canal Zone, Mexico, Hawaii and Philippine Islands, \$3.00 per year in advance. Under foreign postage, \$3.40. English price: 15/ per annum, 1/6 per number. Volume begins with January and ends with December of each year.

Remittances—Remittances for subscriptions should be made by check, draft, postoffice or express money order, or registered letter payable to the publishers, The C. V. Mosby Company.

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EDITORIALS

Malocclusion and Mental Deficiency

DURING the last few years many articles have appeared dealing with the relation of malocclusion to mental deficiency. Several years ago a very prominent authority examined a number of patients who were mentally deficient, making some of his examinations among inmates of an insane asylum, and he reached the conclusion that malocclusion was very prevalent among people who were mentally abnormal. Similar investigations were carried on by another authority who not only confined his investigations to inmates of an asylum, but made examinations among children in public and private schools, as well as among patients in his own practice. He found that there was just as great a percentage of malocclusion among mentally normal patients as there was among the mentally deficient. The results of these investigations, as well as those obtained through researches carried on by other men, would seem to

indicate that the real truth of the matter lies somewhere between the two extremes.

The great trouble among those who wish to establish a relation between malocclusion and mental deficiencies seems to be that they fail to determine which is the cause and which is the effect. In a mentally defective child suffering from malocclusion, the malocclusion may have nothing to do with the mental debility; in other words, the malocclusion may be the result of a condition having nothing whatever to do with the development of the mind—a condition which may be present in a child who is growing normally. Many cases of malocclusion may be placed in this category.

It may be true that a majority of patients with impaired mentality have malocclusion, but the mental condition is not the effect of the malocclusion; there is an abnormal development in the entire system which not only produces the mental debility, but the malocclusion as well. In cases of this kind treatment of the malocclusion would in no way benefit the mentality of the individual, unless it would enable him to breathe better and masticate better, thereby improving the general physical development. Although the malocclusion has not been the cause of the mental deficiency, or the mental deficiency the cause of the malocclusion, there is a close relationship existing between them which we are forced to recognize. This is made evident by the fact that almost every child suffering from malocclusion shows mental improvement when the malocclusion is corrected. This is proved by the higher standing in school. They likewise show an increase in physical development. Because of the improvement in the grades at school during the treatment of the malocclusion, some men have attributed the mental improvement to the correction of the malocclusion. While it is true that the mentality has been bettered, it is also true that the physical development has been improved, and we are again confronted with the problem of proving whether the mental improvement is the direct result of expanding the dental arches and correcting the malocclusion, or whether it is a result of the improved physical condition. It may be possible that a better mastication and a better respiration play more of a part than is generally believed.

Some writers have advocated the theory that in extreme cases of malocclusion, especially those cases associated with a narrow upper arch, there is a lack of development at the base of the brain, causing pressure upon the pituitary gland and the nerves at the base of the brain, and consequently interfering with the proper function of the brain. Cases have been reported in which normal children with small arches have become insane, and some men have attributed the insanity to the narrow upper dental arch. It has been shown that nerve impaction and irritation caused by impacted teeth have produced nervous conditions which were relieved by the removal of the impaction. Impacted teeth may produce irritation great enough to cause mental deficiency, and it would also be reasonable to believe that crowded upper arches and bad cases of malocclusion would tend to produce abnormal mental conditions and probably insanity in some cases. A case of a child reported by Dr. Price a few years ago

showed that the mental condition became greatly improved immediately following the expansion of the upper arch. During the period of retention the retaining appliance broke and allowed the upper arch to relapse; the mental deficiency of the child became as bad as it was before the expansion of the upper arch. Orthodontic treatment was again instituted and the mental condition of the child again improved. In this case it would seem that the narrow upper arch did exert some pressure upon the base of the brain, and through the expansion of the arch and the associated structures, the pressure was relieved and the mental condition of the child improved.

As a result of the various factors entering into the relation between malocclusion and mental deficiency, we are forced to believe that the result of correction of the malocclusion, whether by relieving pressure at the base of the brain or by improving mastication and respiration, thereby improving the physical condition of the child, is important enough to recommend orthodontic treatment. We can not always promise the parents that the correction of the malocclusion will improve the mental condition of the child, but it offers so many possibilities—relief of the nerve pressure, better mastication, and better respiration—that there is no other one single thing that offers as much of a chance for betterment. Again, following the facts that the correction of malocclusion improves the mental and physical condition of all children as shown by the increase in weight, standing at school, etc., we are justified in believing that it holds some possibility even in some of the most undesirable cases. Realizing the importance of normal mastication and normal breathing and the possibility of obtaining these, we believe that the advantage of orthodontic treatment can not be too strongly recommended. In the case of a child suffering from extremely abnormal mental development, even though the mental condition itself is not improved, the appliance will in no way interfere with the mentality, and it makes possible the increased physical development which can not help but be beneficial.

Orthodontic Society Programs Wanted

WE are requested to announce by Dr. Bernhard W. Weinberger, of 40 East 41st Street, New York City, that he would like to secure copies of the following programs:

1. Programs of the 1st to 13th Annual Meetings of the American Society of Orthodontists.
2. Programs of the Alumni Society of the Angle School of Orthodontia, prior to 1909.
3. Programs of the Alumni Society of the Dewey School of Orthodontia, 1st to the 7th Annual Meetings.
4. Programs of the first four meetings of the Pacific Coast Society of Orthodontists.
5. Programs of the Central Association of the Alumni Society of the Angle School of Orthodontia.

Doctor Weinberger wishes to secure these programs to complete his records for the "History of Orthodontia," which is now running serially in *The International Journal of Orthodontia*. These programs will be returned by Doctor Weinberger as soon as copies can be made of same.

We hope our readers who may have any of these programs will communicate with Doctor Weinberger immediately in order that he may complete the notable work he has undertaken.

Meeting of American Institute of Dental Teachers

THE next annual meeting of the American Institute of Dental Teachers will be held at Hotel Piedmont, Atlanta, Georgia, January 28, 29 and 30, 1919. Papers on the teaching of war dentistry and an exhibit of war appliances will be the main features, and along with these will be the usual papers on teaching methods.

All persons interested are cordially invited. Abram Hoffman, D.D.S., of 381 Linwood Avenue, Buffalo, N. Y., is Secretary of the Association.

Alumni Society of the Dewey School of Orthodontia

THE Alumni Society of the Dewey School of Orthodontia will hold their next annual meeting in St. Louis, March 6, 7, and 8, 1919. The usual high standard of the meetings of this Society will be maintained. All interested in orthodontia are welcome. Address communications to Dr. George F. Burke, 741-43 David Whitney Bldg., Detroit, Michigan.

Cancellation of Appeal for the Collection of Scrap Platinum

THE Chief of the Platinum Section and the Section of Medical Industry, War Industries Board, in a recent communication expresses appreciation of the hearty response made by physicians, dentists and others when the call for scrap platinum was made.

As the Governmental demand for platinum in the making of explosives, etc., has been tremendously decreased by the curtailed war program, it is requested that no further scrap platinum be tendered to the Government through the channels indicated in former communications.

Another Liberty Loan Coming

SECRETARY of the Treasury McAdoo has announced that, no matter what the results of the pending overtures for peace may be, there will be another Liberty Loan. To use his expression, "We are going to have to finance peace for a while just as we have had to finance war."

There are over 2,000,000 United States soldiers abroad. If we transport these men back to the United States at the rate of 300,000 a month, it will be over half a year before they are all returned. Our army, therefore, must be maintained, fed, and clothed for many months after peace is actually declared.

The American people, therefore, having supported the fourth Liberty Loan with a patriotism that future historians will love to extol, will have an opportunity to show the same patriotism in financing the just and conclusive victorious peace whenever it comes.

Not for a moment, however, is the treasury acting on any assumption that peace is to come soon. Until peace is actually assured the attitude of the treasury and the attitude of the whole United States Government is for the most vigorous prosecution of the war, and the motto of force against Germany without stint or limit will be acted up to until peace is an absolute accomplished fact.

One more Liberty Loan, at least, is certain. The fourth loan was popularly called the "Fighting Loan;" the next loan may be a fighting loan, too, or it may be a peace loan. Whatever the conditions, the loan must be prepared for and its success rendered certain and absolute. Begin now to prepare to support it.

Why We Should Join the Red Cross

HOW American Red Cross physicians engaged in relief work in Jerusalem are accomplishing worth-while results in the face of great difficulties—and what they are up against, is shown in a report just received here from W. S. Dodd, A.R.C. physician working at Mejdol.

With two capable English trained nurses, and three native helpers, more or less useful, Dr. Dodd, his "hospital" housed under tents, performed 252 operations in seven weeks, besides giving medical examinations, treatment and counsel to hundreds of the destitute inhabitants and refugees.

His report says in part: "The work of the hospital was of the plainest sort, it might be called primitive. About twenty-five tents comprised the hospital proper, with a dispensary tent, and tents for the living quarters of the staff.

"The soil was all the purest sea-sand with thistles and scant grass; going barefoot was the universal custom, and in our own quarters we of the staff used to follow that custom with great pleasure. * * * *

"The professional side of the work was of the greatest interest to me and every day was a pleasure. The clinics numbered sixty to a hundred a day. Of course, we had all classes of cases in medicine and general surgery, but by far the larger proportion of our patients were eye-cases.

"Of the 252 operations that I did in less than seven weeks, 222 were for the eyes. This is the number of persons operated on, most of them having more than one operation, perhaps on all four lids, so that I really operated on 408 eyes.

"There were some cataracts, not more than would be seen in the same number of cases elsewhere, but trachoma and its consequences accounts for almost all of the eye troubles in this land. I set out to treat these cases radically and secured fine results when I could keep the patients long enough for a reasonable after-treatment. But even so, the number of eyes that can be saved from partial and total blindness is large and the economic value of each eye thus saved is enough to make the prosecution of this line of work of the greatest importance for the redemption of the land.

"The accident cases are always interesting. I had the last end of treatment of some cases of bombed hands, of which there had been quite a number in the earlier days. These were largely in children, and were due to their picking up unexploded Turkish bombs that were lying in the fields from the time of the British advance in the Gaza region. Many fingers and even hands were lost from this cause.

"Vermin was the great enemy we had to fight. Fleas were hardly counted as a problem because we could do nothing against them, they were everywhere and inevitable, and so far as we know at present not being the carriers of any special disease, did not come within the hostility of a medical conscience.

"Lice and maggots were a daily terror. How many wounds and injuries came to us filled with maggots I can not tell. A favorite dressing for a wound is a piece of raw meat, a breeding place for maggots, and they can hardly be blamed for invading the adjoining premises.

"Many a child had to be put under chloroform in order to search out and pull from their hiding places deep in the middle ear a half dozen wriggling maggots whose every motion was causing torture to the innocent victim.

"A woman came to the clinic complaining of headache. A single sore on her face led to questioning, and when she rather unwillingly undid her turban we found an exaggerated case of impetigo, and every separate sore was as if the whole thickness of the scalp down to the bone had been punched out, and every sore was a nest of maggots. I removed 60 at the first seance, and at the first dressing next day the nurse had more to do. The headache was cured without further treatment. And these are not the most loathsome cases that we saw.

"Another great difficulty with which we had to contend was the filthy habits of the people. In spite of providing proper sanitary facilities, we were compelled to have a scavenger go around every morning and clean up the filth from around the tents of the patients. The women were as bad offenders as the men. We made it a rule that anyone known to have violated these simple sanitary regulations must go without their dinner next day, and this was quite an effective punishment."

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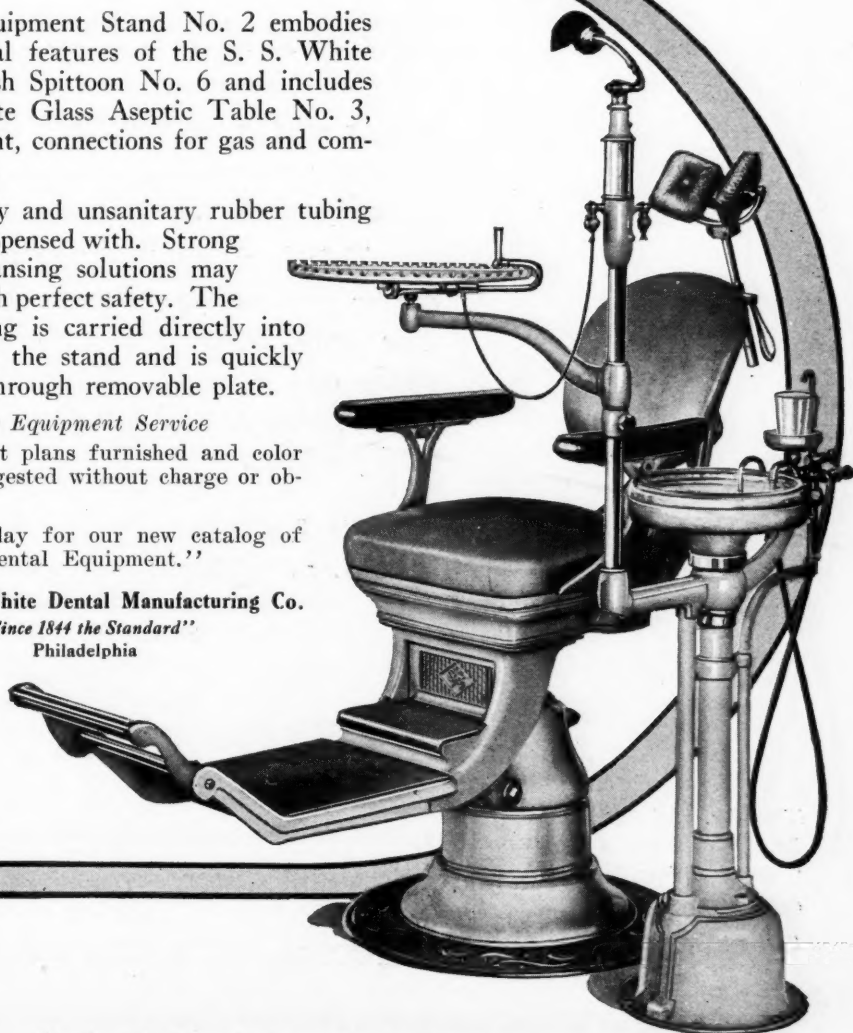
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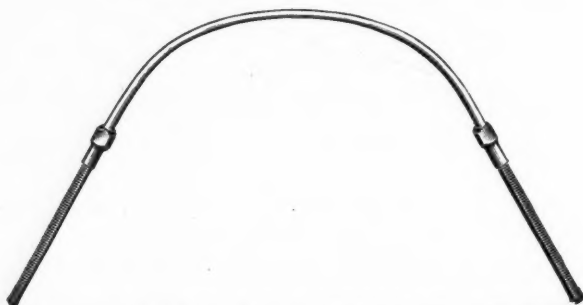
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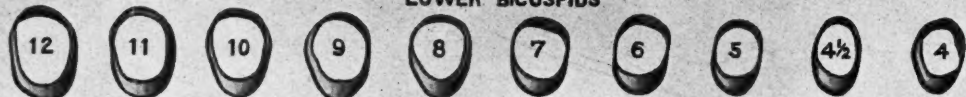
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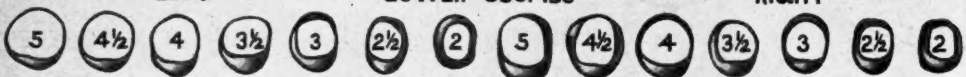
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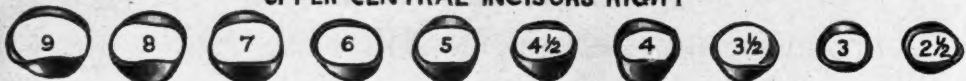
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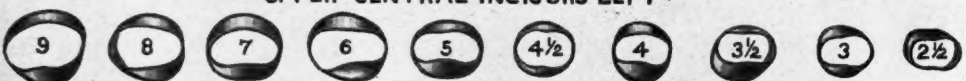
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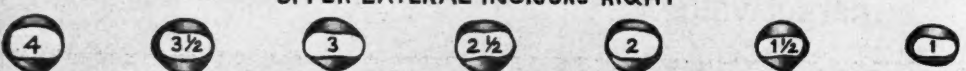
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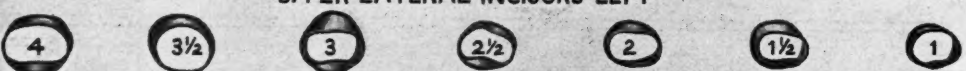
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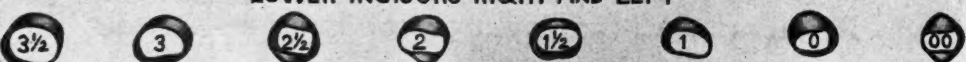
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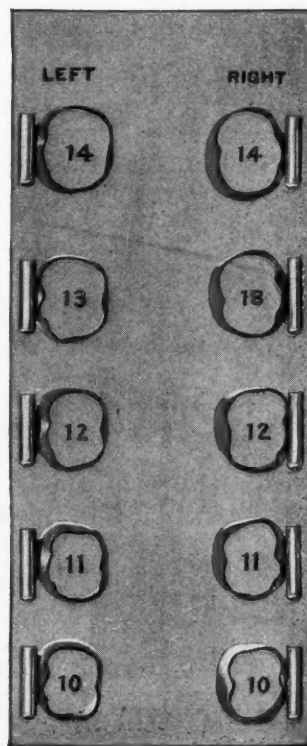
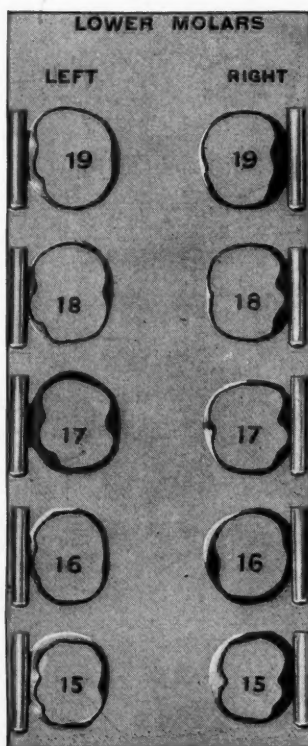
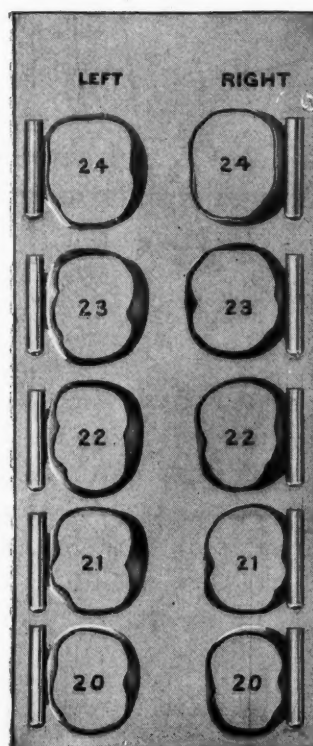
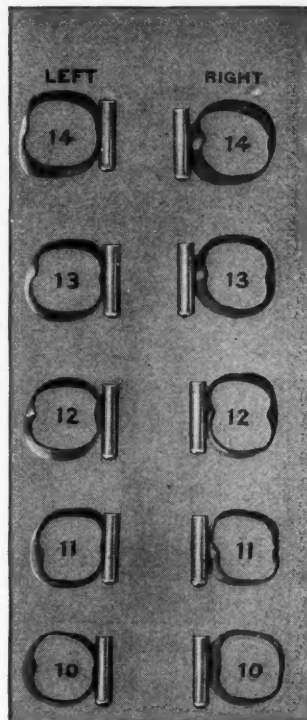
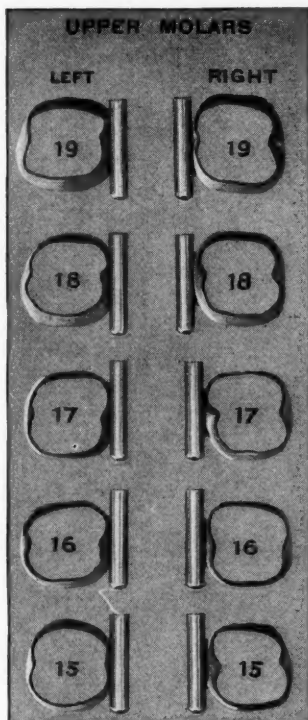
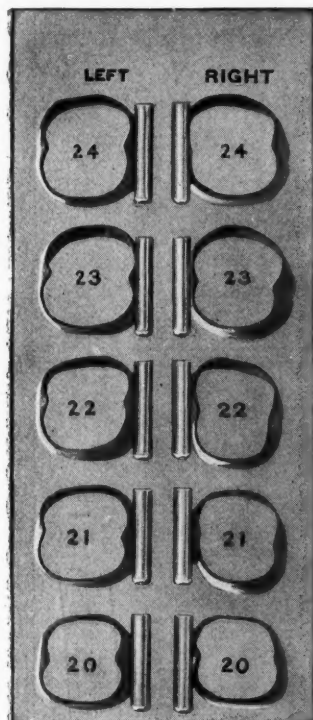


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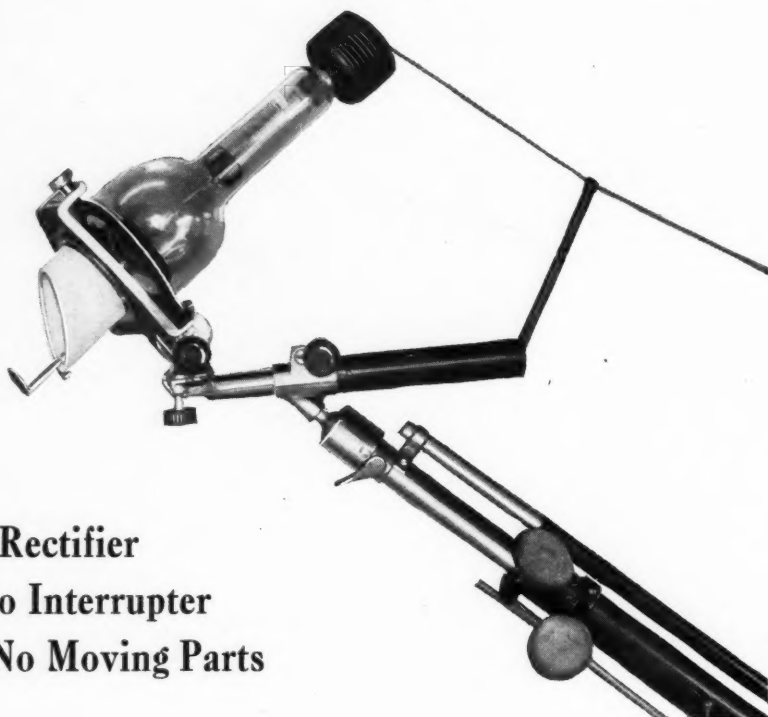
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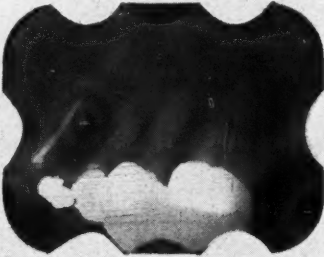
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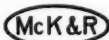
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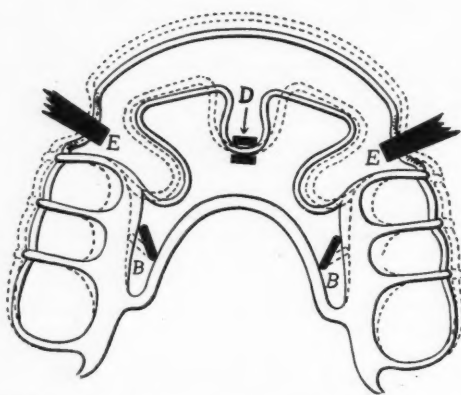
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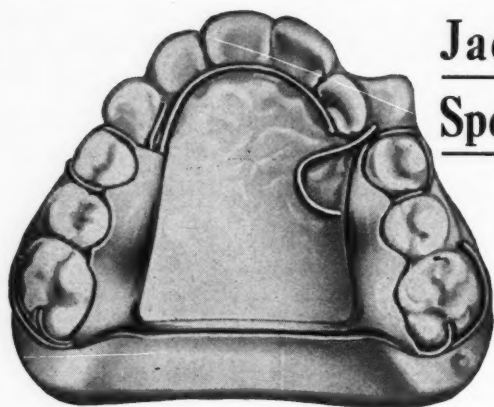
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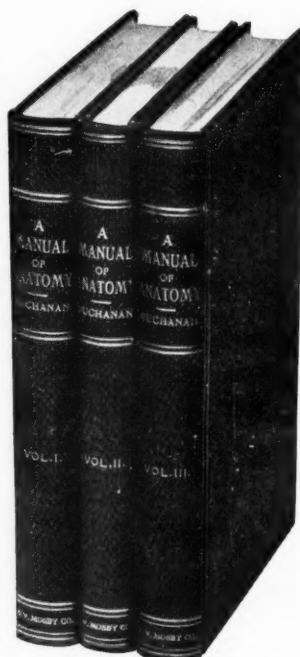
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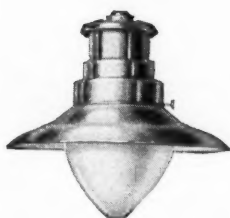


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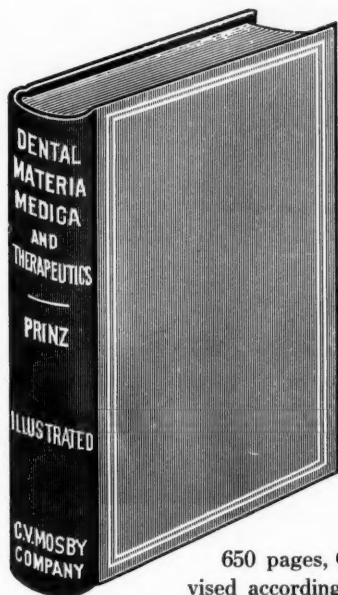
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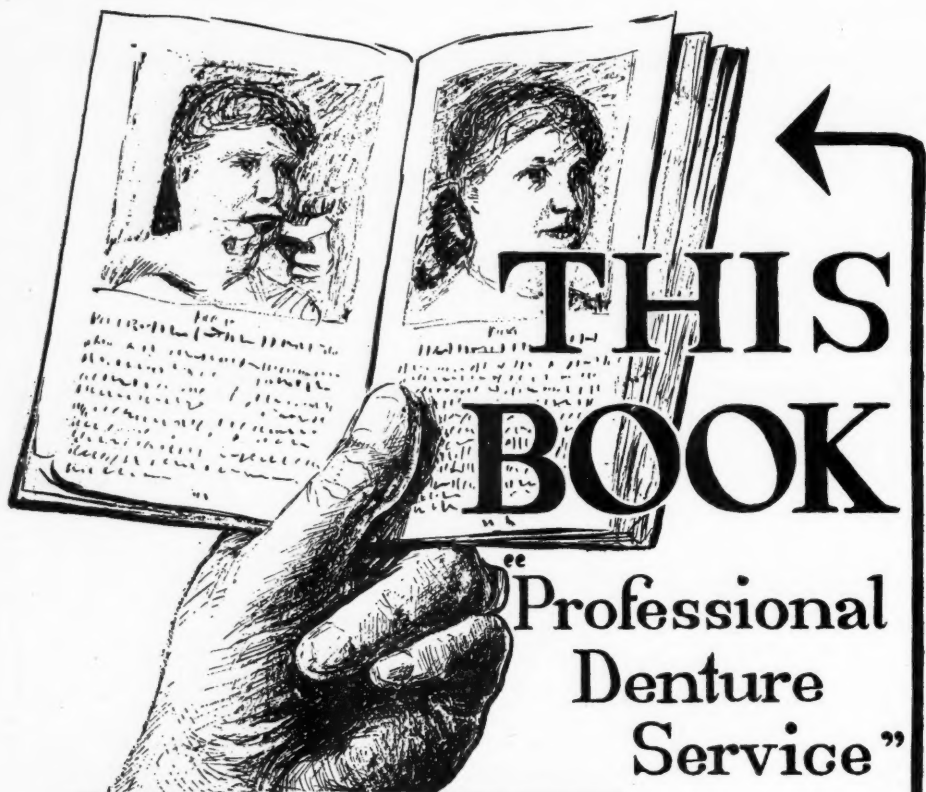
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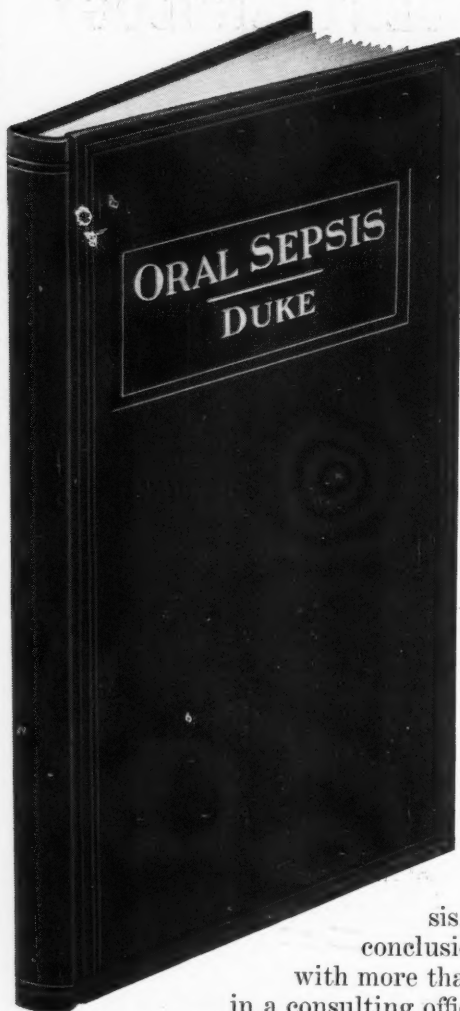
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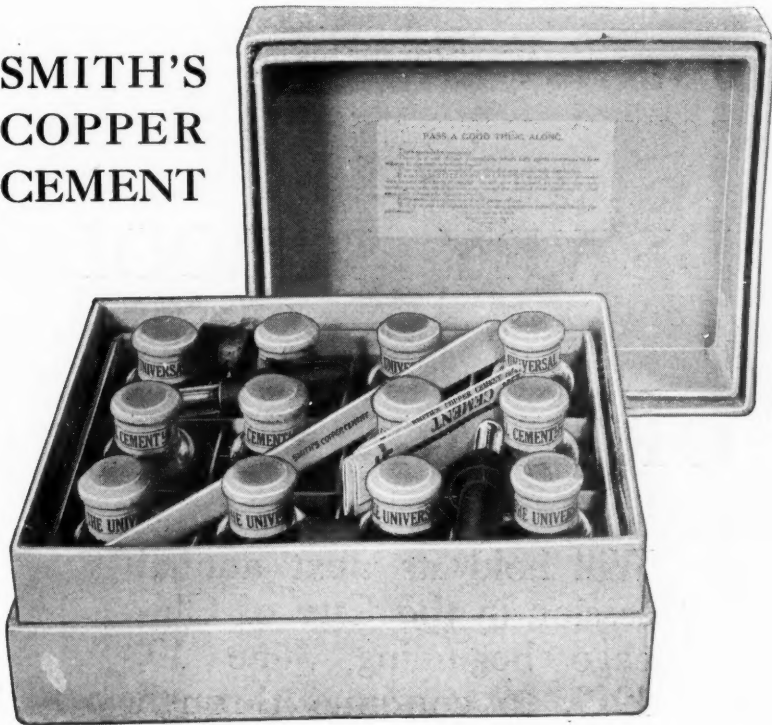
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The Genuine "FISCHER" (All Glass and Metal)

R. & R.

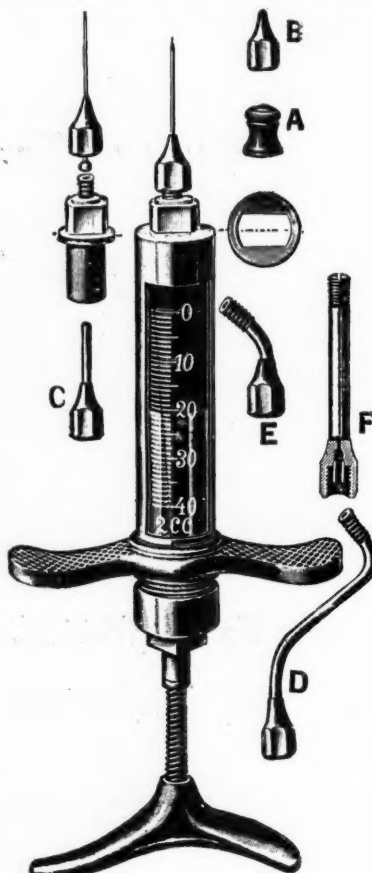
Hypodermic Syringe

No Leather or Rubber Washers

These Syringes are made of metal and glass only, with graduated glass barrels, accurately fitting monell-metal plungers, extra large and strong movable finger bars, checkered on the gripping surface, and screw extension rod with crutch handle, which adjusts itself to the ball of the thumb and permits of the exercise of particularly strong pressure. Their entire surface is uniformly round, smooth and broad-edged. Small grooves and edges, apt to retain dust and impurities, difficult to clean, are avoided. The mounts, chucks and connections (see illustrations) can be screwed firmly down with small spanner furnished with each; they are thus joined with positive security to the syringe nipple without the use of either leather or rubber washers. Such washers are not aseptic, a perfectly tight joint cannot be made with them and they quickly wear out. The non-use of washers represents a great and convenient practical simplification and an important therapeutic improvement.

Connections shown in illustration have a layer of soft composition metal and a central hard metal bushing embedded above their interior screw threads. The shanks are of very small bore, reducing waste of fluid to the minimum.

Each barrel, plunger and plug form a distinct unit, in which the parts are accurately fitted and are not interchangeable.



40 minim or 2 ccm Syringe
2-3 actual size.

We have been manufacturing the genuine "Fischer Perfection Syringe" for nearly two years and are filling orders as fast as we can make the syringes. The demand is and constantly has been greater than the production. We will fill all orders in turn as promptly as possible.

Prices in U. S. A.

(40 minims)

Syringe only, with cap and wrench.....	\$ 6.50
Syringe Outfit, including 2 doz. Needles, Chucks and Connections.....	10.00
Syringe Outfit, in metal case.....	12.00

The $\frac{1}{8}$ inch needle is used for mandibular anesthesia.

Directions for use accompany each Syringe.

NOTE—Professor Fischer recommends the exclusive use of the short bevel pointed needles, the outside diameter of which is about 25 gauge, regular Schimmel needles.

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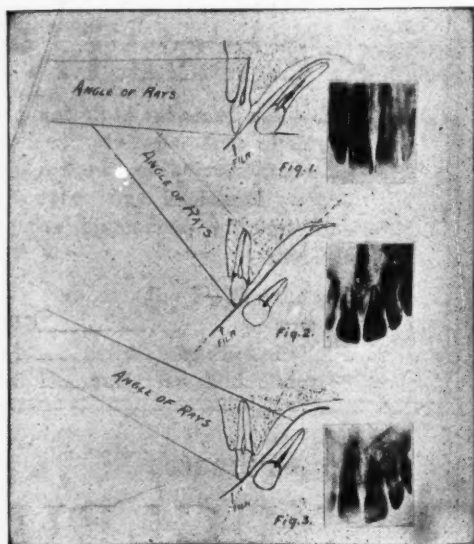
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